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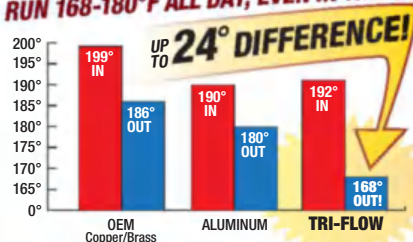


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ON THE COVER:

Decades before Ford ever used the term "Super Duty" to describe a pickup, Pontiac used "Super Duty" to identify its most potent engines. HOT ROD's own Brandon Gillogly captured the grille-height view of Jordan Quintal's 462ci, Pontiac-powered 1930 Ford Model A for this month's cover.

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What Is Hot Rodding?



[Cars and trucks have always captured my imagination and have been the focus of my hot rodding passion. If I had my pilot's license, that might be different.]

"What is a hot rod?" Or, "What is hot rodding?" Those are two of the most common questions I get asked by people who don't know anything about our industry. I understand why outsiders don't know the answer, because in truth, what a hot rod is—is constantly changing.

To me, "hot rodding" is a form of constant improvement. While a "hot rod" is the target of that improvement. How something gets "hot rodded" can take virtually any form—from parts to paint, materials to model years, and processes to power. All hot rodders need to do is begin with some physical form that captures their curiosity and benefits from improvement. And it helps if in the end the hot rod looks cool enough for people to notice your efforts.

To "hot rod" something is the original term used for "hacking" or "disrupting." It's a form of evolution that starts by forcing an imbalance to a balanced system—think big-block engine swaps. We then perfect or "tune" that imbalance until the result is better than what everyone else has. In 99 percent of the cases, our hot rodding revolves around transportation, but hot rodding isn't limited to things with wheels and engines.

For cars it's easy to see how this process works. But is there anything you can't hot rod? I

really don't think so. I'm not aware of any perfect process, machine, or vehicle that can't be improved. I'll acknowledge there are some vehicles that are more difficult than others to hot rod. Hot rodding a complex and well-balanced vehicle is challenging (and expensive), while simple canvases lend themselves to enormous hot rodding potential. Some of the most popular things in the hot rod world are the components and cars that need the most work or have an architecture that lends itself to easy and inexpensive modification and personalization.

Start with a small-block-Chevy-powered roadster and the sky is the limit. Start with a twin-turbo, direct-injected, all-wheel-drive, late-model anything and hot rodding becomes more challenging. But in reality it's only more challenging for those of us used to the simpler canvases. Every day new hot rodders come along and modify things that we once felt were too complicated and too expensive to mess with. Their toolboxes and timeslips may look different than ours, but the intent and goals will be the same. As we enter our 68th year of the HOT ROD brand, you can rest assured that this eternal pursuit will never go out of style, will never be complete, and will never be past its prime.

➤HOTROD.COM/David-Kennedy

📷 Larry Chen



IN MY OPINION

Great Advice
"Rule number 1: Look good doing it. Because if you look good doing 'it,' you must know what you're doing, and you must be doing it well." That's according to my older brother, Patrick, who says this is the first rule of ocean sailing. Rule number 2? "Don't listen to anyone on shore. Because if those people on shore really knew what they were talking about, they'd be out in a boat next to you." Rule number 3 is, "If all else fails, and the ship is starting to sink, always refer back to rule number 1."

Appointment Car
If your hot rod is a vessel of constant improvement, it can be exhausting to improve and perfect it while you're just trying to get to the dentist or an appointment with your kids' teacher. While everything can be a hot rod, I'd recommend having an "appointment car," too, a vehicle that all you need it to do is get you to appointments on time. Preferably with working A/C. For the record, I have no such vehicle. I should, but I can't leave anything alone.

➤HOTROD.COM/Brandon-Gillogly



Not counting commuting to work, I'll have 4,000 miles on the road this month. I wish that all of the miles were in the Charger Hellcat, but half of them were in rental cars. It makes the Hellcat even more impressive when you go back-to-back with a brand-new car that makes one-fifth the power.

➤HOTROD.COM/Elana-Scherr



Is it too soon to talk about New Year's resolutions? I am going to get my Challenger running again, no matter what. I hope I can find it in the garage under all the dust.

➤HOTROD.COM/Thom-Taylor



I just bought an "appointment car" that belonged to drag racer Larry Huff, of Soapy Sales fame, who recently passed. Huff was one of drag racing's major characters on and off of the dragstrip, but some of his pursuits off the strip made him more famous than those on it.

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HOT ROD Archives

50th Anniversary of the Goldenrod Land Speed Record

As we speed through time and space, we are now coming up on some pretty historic hot rod anniversaries, with few as significant as the Summers Brothers' Goldenrod Land Speed Record set November 12, 1965. Many know of the Summers Brothers for their beefy racing axles and spools, but 50 years ago, these two hot rodders hit the salt with the intent of beating the standing land-speed record set by Englishman Donald Campbell at just over 400 mph. Bill and Bob Summers' homebuilt masterpiece was 32 feet long, 48 inches wide, and 42 inches in height, weighing nearly 6,000 pounds but with a miniscule 9 sq-ft of frontal area, and

an astonishing drag coefficient of only 0.117, based on Bill's wooden models tested in Cal Tech's wind tunnel.

Powered by four 426ci naturally aspirated Chrysler Hemi engines arranged inline, with Bob driving, the two-way average of 409.277 mph at Utah's Bonneville Salt Flats put them in the record books. It took more than a decade to beat that record, and then only with a supercharged engine.

Because the engines were loaned to the brothers, after setting the Land Speed Record they returned them to Chrysler, which ended any further Goldenrod record attempts. The car continued to be of such

significance that it was displayed at various shows and racing events over the years, eventually landing at the NHRA Museum in Pomona, California, where neglectful outside storage hastened deterioration.

Though Bob passed away in 1992, brother Bill was able to see the Goldenrod restored to its former glory. In 2002 it was purchased by the Henry Ford Museum in Dearborn, Michigan, and through a grant from Save America's Treasures, was restored by SCTA president Mike Cook in Norco, California, with former HOT ROD staffer John Baechtel acting as the official restoration director.

Bill Summers died in 2011, but not before seeing the finished restoration, and the renewed interest in his and his brother Bob's Goldenrod effort, an against-all-odds racing achievement accomplished by two ingenious hot rodders.

► HOTROD.COM/Thom-Taylor

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#HOTROD

Scene by Readers: Featured Artist Jessica Lynn Walker

Jessica Lynn Walker is no stranger to the photography world, and many of her photos have even been featured in HOT ROD and other TEN publications. Since childhood, Jessica's hobby has been snapping shots, a hobby that developed into a career of freelance photography about eight years ago. As far as she can recall, Jessica's passion for cars has persisted throughout the years and has led her from simply observing cars to working on them and eventually photographing them.

As we dug more into her craft and her involvement with social media, we discovered Jessica isn't particularly a social-media addict. She uses Instagram the majority of the time and occasionally hops on Facebook and Twitter. She opted for Instagram as a way to share her "artsy" phone images and images that were not necessarily fit for her professional portfolio. "It was a way to shoot for fun," Jessica says. When asked for some of her Instagram favorites, she suggested @amysorephotography and @rvt3.

Jessica drives a VW Jetta Sportwagen and says its sunroof is a perfect shooting spot. She's happy with the Jetta, but hopes to own a project car or a café racer in upcoming years.

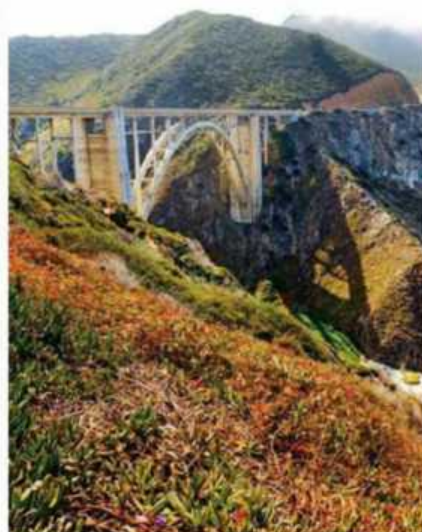
Want to see more of Jessica's work? Follow her on Instagram: @jlw_photo. > **Albert Hernandez**

INSTAGRAM NAME	@jlw_photo
WEBSITE	JessicalynnWalker.com
CAMERA	Nikon D810, Nikon D4, and Fujii X-M1
FAVORITE FILTER	For her automotive work, Jessica refrains from using filters, but she uses some when she shoots without the proper equipment: "To pretty it up," she says.
BEST TIP	"Break the rules" and "experiment."

01 Wedding-day shoes on the left, race-day shoes on the right.

02 One of Jessica's specialties is the "rig shot." In this unedited photo, you can see the carbon-fiber tube she uses to rig her camera to a car. Using the carbon-fiber tube means there's no relative movement between the car and the camera—allowing for a cool blur effect with razor-sharp focus on the car. The rig is then Photoshopped out of the image.

03 Shooting cars inside any museum is tough; here Jessica focused on the iconic hood of Robert E. Petersen's 1967 Ford GT40 as it was on display in the old version of the Petersen Museum. Look for this car to be displayed (with much better light) in the \$100-million renovated Petersen Museum that is having its grand re-opening as you read this. More info at Petersen.org.



SEND YOUR PHOTOS

Do you have a collection of awesome car photography? Tips on how to take better shots? If you or someone you know should be featured in #HOTROD, let us know at HOTROD@HotRod.com or tag us on Instagram or Twitter @hotrodmagazine.



01



03



02



Hot Rod Anything! Two-Stroke On the Water



© Ross Farnham

If you haven't watched DC Shoes: Robbie Maddison's "Pipe Dreams" on YouTube, take 4 minutes and give it a look. OK, at this point we're assuming you've seen the video, so any spoilers ahead are your own fault. We just watched it again because we can't get over how awesome it is seeing a motorcycle tear across a beach and head right into the water, skittering across the top like a crazed lizard. Maddison's customized KTM motorcycle is capable of not only staying atop the water

but is fast enough to outrun the infamous Teahupo'o reef break in Tahiti. We were so impressed by the feat that we asked the Australian supercross and stunt rider how he and his team transformed the motorcycle from terrestrial to amphibious duty.

Maddison told us he originally tried riding on water in a Yamaha YZ-450F and then made several attempts to get a KTM 450 SX-F four-stroke to stay atop the water. "Unfortunately, the electronics in the new 450 bikes didn't work so

well in salt water. To get it running again after sinking was a lot more work." Indeed, each time a bike sank meant a thorough teardown and reassembly was in order. Although it isn't as powerful, the KTM 300 SX two-stroke bike that Maddison used is lighter and much simpler to work on, cutting the time to get a swamped bike back up and running in half.

Maddison and his crew tested the bikes on a freshwater lake first and had to prove the bikes were fully sealed before getting

them out on the water. They sealed the fuel, transmission, engine, everything. They knew water could go in through the intake and exhaust, but they had to be sure the water wouldn't be contaminated by oil or fuel getting out. A total of six bikes were used to develop the amphibious motorcycle. Of the six, two were transported to Tahiti for filming.

➤ HOTROD.COM/Brandan-Gillogly

DO YOU HOT ROD EVERYTHING?

If you've hopped up anything that's not a car, let's see it! Hot leaf blower? Bitchin' gas grill? Customized kitchen cabinets? Anything goes. Email pics and details: HOTROD@HotRod.com.

► The number of paddles on the rear tire proved to be another critical design element.



I didn't have much steering control once the waves started coming in; I could bank and change directions, but the wave was dictating most of where I was going."

— Robbie Maddison, on steering a dirtbike on water

► If the bike is going down, Robbie Maddison uses a valve mounted on the handlebars to open an air cylinder to inflate an airbag to float the bike to the surface. That's where support crew on jet skis would come in and tow the bike to a landing barge.

► The air intake was repositioned to keep water out.

► A set of skis was mounted on each wheel to keep the rear wheel at the optimum depth for the paddle tire to do its job. Maddison told us the skis, "definitely took a lot of time and effort to get right. There was a lot of trial and error and finding that perfect ski design and placement was a huge component to the success of this project."

► The brakes aren't any use on water. Backing off the throttle slows the bike, but slow too much and down it goes.



KTM 300 SX

- One-cylinder two-stroke engine
- Twin Valve Control (TVC) Power Valve
- Kickstarter
- Five-speed transmission
- Front and rear disc brakes
- Water-cooled with reed intake and exhaust control
- Triple-clamps adjustable front suspension

SALVAGE EFFORT

Once recovered, the oil and gas were drained and flushed and the intake, seat, and electronics were dried out. Then it was resealed. The process took about two hours each time. "While the DC crew and I were down in Tahiti, filming 'Pipe Dream,' the bike went down nine times," Maddison said.

Readers' Projects

Want to share your car with the whole world? Send photos and info to HOTROD@HotRod.com.



Patrick Posey // Leighton, Alabama

Patrick's 1963 Pro Street Nova displays a blown Precision Race Engines 434 that produces 820 hp on pump gas. It's backed by a Lander's Racing Powerglide.



Michael Krueger // Midland, Michigan

This green gem is a 1971 Torino GT. A father-and-son project, it was completed in-house and now holds a 302ci, four-barrel motor married to an AOD tranny.

The HOT ROD Archives



20 YEARS AGO

January 1996 (108 pages, \$3.25): This unusual cover broke some new ground, along with two unwritten rules against vehicles likely to kill newsstand sales: 1950s cars and black cars. Editor Drew Hardin surely set a single-edition record for most cover blurbs containing the word “awesome,” without hyping a great feature on Smokey Yunick’s restored Trans-Am Camaro. Also inside, David Freiburger’s photos from Dick Landy Industries gave readers a sneak peek inside Mopar Performance’s all-new Street Hemi, and Gray Baskerville made his annual pilgrimage to Bonneville.

40 YEARS AGO

January 1976 (116 pages, \$1): Subscribers and newsstand browsers might’ve needed a double take at the dateline to dispel suspicions that an April Fools’ issue hadn’t arrived three months early. In an ugly contest, it’d be tough to choose between the zoomie-exhaust van and a bubble-top Corvette that appears to be the victim of botched cosmetic surgery. But wait, there’s more: a dozen “Color Murals To Blow Your Mind” (or lunch!) on trucks with names like “Ghoul’s Bone Box,” “The Demon,” and “Moby Van.” Folks not scared off by this front page were rewarded with great articles recapping Don Garlits’ 25-year career and his 5.63-second, 250-mph domination of the 1975 SuperNationals.

60 YEARS AGO

December 1956 (68 pages, 25¢): Chevrolet’s revolutionary V8 was barely a year old when this issue went together in the summer of 1955, yet Edselbrock Equipment Co. had already developed a dyno-proven, streetable combination of hardware and mild machine work that increased output from 170 to 229 dyno-charted horsepower. Tech Editor Racer Brown’s cover story included possibly the first published photo of both Vic Edselbrocks (captioned, “Vic Jr. did the work, was supervised by his dad.”). Editor Wally Parks’ column defended HRM’s unprecedented testing of new-model vehicles. Four inside pages followed the triple-threat, Oakland-winning Glass Slipper slingshot from the drags to the salt (181 mph), while a photo spread explained how 11 SoCal Lions Clubs combined with Long Beach-area car clubs to create the recently opened Lions Associated Drag Strip. >Dave Wallace

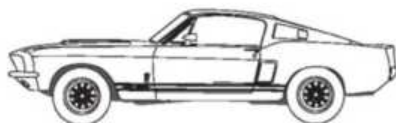


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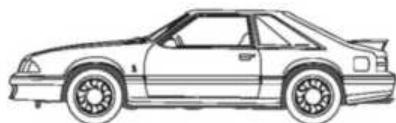
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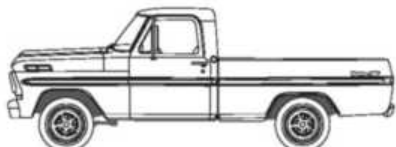
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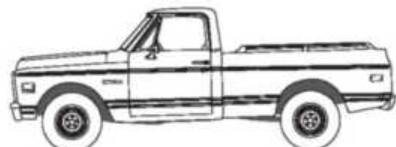
65-73 MUSTANG



79-93 MUSTANG



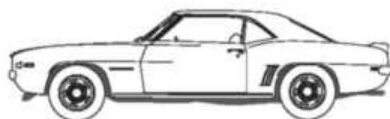
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47-98 CHEVROLET
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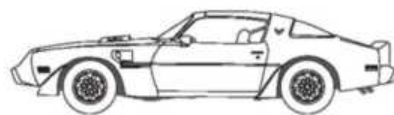


67-81 CAMARO

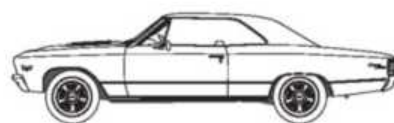


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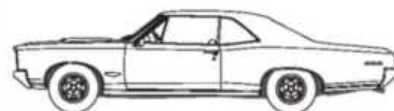
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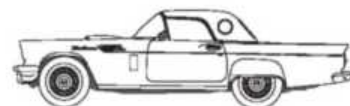
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Take 5 With AL UNSER JR.

If you are born an Unser, you're expected to grow up to win the Indy 500, and sure enough, Al Unser Jr.—better known as “Little Al”—did just that, winning the race both his father and uncle Bobby won. Not once, but twice: in 1992 and 1994. Not only did he win Indy, he also won 34 CART and IRL races, won the CART championship in 1990, the Super Vee title in 1981, Can-Am in 1982, IROC in 1986 and 1988, and the 24 Hours of Daytona in 1986 and 1987. Retiring in 2007, he's devoted his time to celebrity races, starting the Race Clinic for Paralysis charity, running the 25 Hours of Thunderhill with his son, Al Unser III, and friend Miles Jackson, and making headlines of the type he wishes he hadn't.

A bitter divorce in 2000 and tabloid fodder including two DUIs, one in 2007 and a second in 2011, have made those who thought him superhuman realize he's just human after all. But his public acknowledgement, down-to-earth attitude, and positive outlook for his future sobriety is starting to gain momentum with product endorsements and appearances. HOT ROD caught up with the affable Unser to get some clarity on his two Indy 500 wins and with the controversy over pack racing, aerodynamics racing, his views on downforce versus horsepower, and how he'd change IndyCar for the better.

➤ HOTROD.COM/Thom-Taylor

HR| Do you miss driving at Indy?

AU| No, I don't miss it at all.

HR| Really?

AU| My dad does, but not me. I had my fun and my day in the sun.

HR| So if somebody offered you a ride today...

AU| My answer would be, “Hell no.” Look, the whole formula has changed since I drove and it's not like it was

when I was racing. My whole IndyCar career was street circuits, permanent road courses, short ovals, and long ovals like Indy, Michigan, and Pocono. In my Champ Car days, we didn't have the 1½-mile banked ovals: Texas, Kansas, and Charlotte. I loved that original formula because we truly were the most versatile single-seat, open-wheeled car in the world—we were the fastest at Indy. Then you take it to Long Beach and it was a great street racer. Now with IndyCar, the formation of the IRL, and the explosion of NASCAR, we have to run the 1½-mile-banked courses. You take a Champ Car and put it on those circuits and it is way too fast, so they really have to govern down the cars to run on those big, banked ovals, and that's why we now have the aero kits and the shape of the IndyCar today, because of having to run those 1½-mile courses and pack racing.

HR| Explain what you mean by “pack racing.”

AU| When I first came into the IRL, there were usually six cars in the lead pack and I could mentally keep track of them. But when Roger [Penske] and Chip [Ganassi] came in full time, and then the merger [of IRL and CART in 2008] that pack of six turned into 12, and I can't keep track of 12 cars mentally. Then with three abreast, it got too crazy. And I'm racing against young kids that have spent no time in the hospital, and I know how they are driving because it reminds me of me when I was their age having never been in the hospital going, “Yeah, 220 mph, that's not too fast.” Ah, yeah it is!

HR| So you would like to see the big ovals be eliminated from IRL racing?

AU| I think the 1½-mile tracks are the needle amongst the nails of IndyCar racing today, and you can't just pull it out and say you're not going to those tracks because now they are a large part of the schedule.

HR| Both of your wins are controversial because of the close finish relative to the location of

[The Unser name is such a huge part of the Indy 500, and the day before the 99th running, a smiling Al Unser Jr. is proud to be part of it.]



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the transponder. (Al's 1992 win was one of the closest in Indy 500 history. The transponders that determined most of the race cars' locations were located within the cockpit, but Al's Galmer chassis had to locate it in the nose. Some observers felt the advantage in the distance from the cockpit to the nose factored into Al being called the winner. However, photography confirms that Al won the race).

AU My transponder was in my nose and Scott's was in his side pod, so the timing is closer than it really is. I think the controversy came from an ad that Valvoline did that said how far the distance in feet at 220 mph is, which is 0.0443 second, and it showed the picture of the finish. The mathematicians said it was closer than it showed, and that it doesn't match up with the photo.

HR Your 1994 win was with the famous pushrod engine built for one race, the Mercedes 5001. When did you first learn Roger Penske had this secret weapon?

AU Roger told me about that engine when he hired me in 1993. When Roger and I signed the agreement, we didn't announce anything, and we were at a charity baseball game. We're in the dugout, and the drivers are all around and we're watching the game, and he goes, "Al, I've got an engine we're doing, you're going to love it. It's for the Speedway. Don't say nothing." Once we had been testing that engine

in Phoenix and Dad and Uncle Bobby come in my motorhome and say, "We understand Roger has a trick engine." I said I don't know about anything," and they say, "You have to know about it, tell us," and their faces are turning red and they're getting mad at me. I said, "I can't tell you anything." Us keeping the engine a secret was a huge undertaking. It was top secret, and nobody knew about it. I said, "You know Roger, even if there is an engine, I can't tell you—you've both driven for him, you know what the deal is." So they walked out of my motorhome and slammed the door. But in testing at Michigan that engine was not living. It would go 200 miles and then blow up.

HR What specifically was blowing up?

AU We had problems with the needle bearings. Then they'd work on it, bring it back, and it would have a little less power and go a little further, and then blow up. Roger finally got Mercedes to put their name on the engine [the engine was developed at Illmore] in March. We had an announcement about that at the Speedway, and at that point it still had not completed more than 300 miles. The first time it ran 500 miles was opening day practice at Indy.

HR Did you wrench on your race cars?

AU I wanted to, but the mechanics wouldn't let me, but I knew what they were doing and I knew my setup.

HR Do you still own any of your old race cars? Or are those long gone?

AU I do, but they're in my dad's IndyCar museum in Albuquerque, New Mexico.

HR If you ran IRL today, what would you change to bring in more fans?

AU [Laughs] It's impossible to do what I would want to do because I don't have a vested interest. But it would be fantastic to have different cars out here—not different paint jobs, but different cars, and different-sounding cars so dads are going to want to bring their kids out and say, "Look at that, see how they did that and how different it is? Wonder what's going to be faster—six wheels or four?"

HR Would you allow electric power?

AU Absolutely electric if they can run 500 miles. That's what Indianapolis Speedway was built for, to develop the automobile. Period.

HR Is there pressure being an Unser?

AU Yes, there is pressure with the Unser name, and we've all felt it because of the success from my uncles and my father. So there is that pressure, you can't deny it. My son felt it a little bit when he was Go-Kart racing, and he really did not like it. But then when he got older and he learned how to drive, he loved the racing.



That's what Indianapolis Speedway was built for, to develop the automobile. Period."
—Al Unser Jr.



UNSER HATES SPORTS CARS!

I have a Suburban, and that's all I've ever had. I've never owned a sports car; with the Suburban, I open the door and step into it, and then I open the door and step out of it. If I could have automatic steering, I would. This goes back to when we would be testing the IndyCar at Phoenix, and some guy brings out his Ferrari or 935 Porsche and wants me to drive it, and they ride in it and he's all white-knuckling and says he's never been this fast in it before. Then he gets out and says, "Wow, wasn't that great?" and I'd say, yeah, that was OK. You have to understand, I just got out of a single-seat, open-wheel, throw-me-down IndyCar. The sports cars are loud, they're rough, you have to shift it, and I don't want anything to do with shifting a street car.

On the Cost of Racing Today
"John Force said it well—he said, 'We've got great sponsors and great support financially, and we've won these championships because we spend more money than anyone else—it's just that simple.' Good job, John, good for calling it out!"



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The Grasshopper

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Owner Jordan Quintal painted the coupe. A few licks of pinstriping frame the panels and accent the sectioned 1932 Ford grille shell.

THE GRASSHOPPER

The 1930 Model A coupe body was chopped 4 inches and channeled over a custom frame to get a low, aggressive stance.



➤Owning a custom-car shop sounds like a dream job for many gearheads. Picture being surrounded by cool cars, getting paid to fabricate and wrench, and ultimately be your own boss. Sounds great, right? But there's a catch. Any time spent building a personal project car is time not spent on a customer's

car, and customers are the ones who pay to keep the shop open. That was the conundrum facing Jordan Quintal, owner of Super Rides by Jordan in Escondido, California. It took him years to convince his buddy to sell him the shell of a 1930 Ford Model A and several more years to complete the extensive fabrica-

tion work that add up to a killer, vintage-looking hot rod. The Model A was a backburner kind of project as dozens of customer cars came and went, getting a bit of attention here and there for three years until finally, in 2013, it was finished.

We've got to talk about the paint first. The green is so vivid

that we couldn't help but notice it from 100 yards away, even when it was surrounded by other cars. Jordan got the look with a judicious application of House of Kolor candy and pearl, first laying down two coats of white base to which seven coats of Limetime Pearl, three coats of Pagan Gold, and three coats

Jordan narrowed a 1950 Ford dash and converted the gauges to electric operation. All of the chrome trim was hand-fabricated.



The quick-release system for the Budnik steering wheel is another custom piece from Super Rides.



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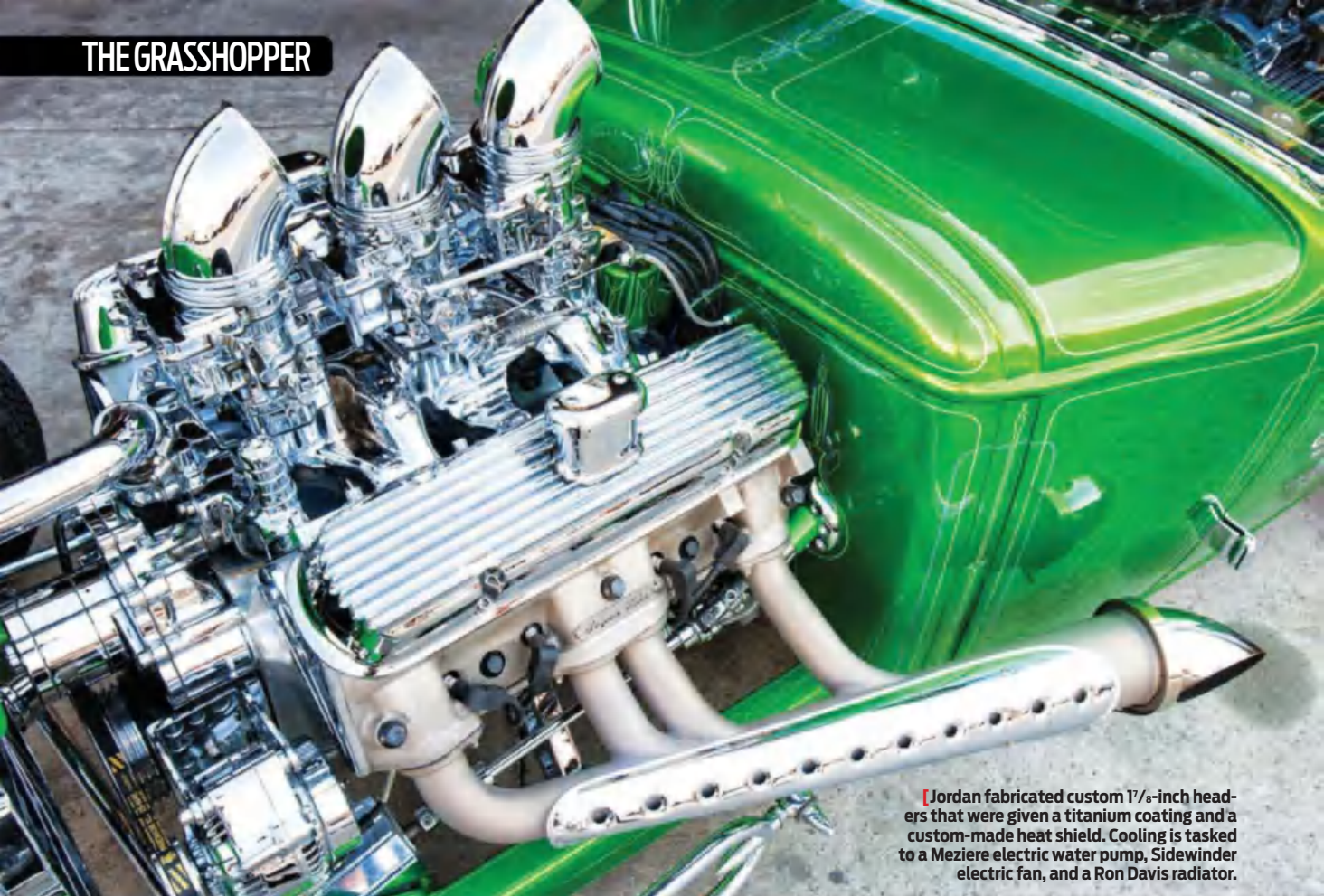
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Jordan fabricated custom 1 7/8-inch headers that were given a titanium coating and a custom-made heat shield. Cooling is tasked to a Meziere electric water pump, Sidewinder electric fan, and a Ron Davis radiator.

of Egyptian Pearl were added before being buried in four coats of clear. It had been 30 years since Jordan had sprayed a car, but it looks like it all came back to him as the color is uniformly deep and even.

That vibrant green spills into the interior, where it covers a narrowed 1950 Ford dash that still uses Ford gauges that Jordan

converted to electric. Armando's Custom Upholstery in San Jacinto, California, wrapped the door panels, driveshaft tunnel, and custom low-back buckets in black leather. A Budnik Flat Track four-spoke steering wheel is connected to the steering column with a custom quick-release system that Jordan designed. The steering

wheel's drilled chrome spokes are mimicked in the custom trim that Jordan fabricated out of brass. The trim can be seen on the doorsills and surrounding the side and rear glass. After being shaped and drilled, it was polished and chromed to perfection. The same procedure was used on the tall shift handle that connects the driver to the

TKO-600 five-speed by way of a McLeod shift linkage.

Going hoodless meant that Jordan had to pick an engine worthy of being on display. A GTO was kind enough to donate its powerplant, and, of course, the iconic Tri-power was the induction system of choice. The Pontiac engine was assembled by Gregg Scott

American Brake & Steering provided a problem-solving electric power brake system that worked with the 4:1 pedal ratio that the coupe ended up with. It sends hydraulic pressure to 11 3/4-inch Wilwood disc brakes at each corner.

A trio of Rochester two-barrel carbs were rebuilt by Rick's Carburetor and mounted to an aluminum reproduction 1966 Tri-power manifold using 1 1/4-inch spacers. The air cleaners and linkages were built in-house at Super Rides.





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Racing, where the aluminum Edelbrock heads were ported and filled with 2.11-inch intake valves and 1.66-inch exhaust valves. The 1967 400 block now uses a Scat 4.25-inch crank and 4.155 RaceTec pistons for a new displacement of 462 ci. A Chet Herbert hydraulic roller cam gives the car just a bit of rumble and opens the valves to the heart of the heads' flow potential.

The product of all that fabrication and tuning is a snorting 500 hp in a 2,600-pound car that's gleaming in chrome and candy and offers up custom details wherever you look. Jordan drives it every chance he gets, and we've seen rubber on the streets of Escondido to prove it. ■



THE MOST COMMON QUESTION POSED TO ME BY MEN:

Male Enhancement Pills ... Do They Really Work?

**Dr. Steffanie Seaver PSY.D**
*Researcher, Author,
Accomplished Public Speaker*

Well, unfortunately, there are not many **Natural Male Enhancement** products that live up to their hype, but one of my readers recently emailed me about a new **RED** pill that blew his (and his partners) mind. After a little research on my end, I feel compelled to share this with the rest of my subscribers. **Please read on ...**

To: Seaver, Steffanie

Today at 7:54 AM

! Red Hot Pill Partner Reaction Challenge

Dear Steffanie,

I recently received a sample for a new male enhancement product, **RED FORTERA**, in the mail. I've tried a few of these natural alternatives (not that I have a real problem) and I'm a relatively healthy male - but what guy **WOULDN'T** want an extra boost every now and then with that special someone? Well, most of the time, results from these products are somewhat underwhelming, but the moment I received this sample, I knew something was definitely different! First, this pill is **RED**, actually a sort of luscious red that you don't ordinarily see. Second, and more importantly, the sample came with an interesting letter from the manufacturer. The letter didn't make any ridiculous claims of how many inches I was going to gain, but it *did* make a rather bold statement that I could not get out of my head, one that intrigued me to the point I had no choice but to try this **new red pill**. Here's what the letter said, verbatim:

"... take our **"Partner Reaction"** Challenge, simply use this **FREE** sample 30 minutes prior to engaging in sexual activity and **TAKE NOTE OF YOUR PARTNER'S REACTION!** That's correct, don't believe our rhetoric, let your partner's reaction tell the real story - we **CHALLENGE** your partner **NOT** to show a reaction to the drastic difference in your performance. We're so sure that you're going to agree, we're **GIVING AWAY A FREE 3 MONTH SUPPLY** to the best testimonials we receive. Simply send us a paragraph or two describing your partner's reaction to your newfound prowess. We'll post the best descriptions we receive to our website (so keep them "clean" of profanities), and if yours is one of them, we'll send you a full **3 MONTH SUPPLY** absolutely **FREE!** (All personal info will be kept confidential.)

I couldn't believe it - these guys were so confident in their product, they were literally saying **MY PARTNER WOULD NOT BE ABLE TO CONTAIN HER REACTION** to the distinct difference in my performance. **THAT'S BOLD!** I mean, jeez, it's one thing to say take this pill every day for this next 60 days and feel a difference, but to literally say - take this pill today, **ONE TIME**, on your **FIRST TIME** trying it, and watch how your partner reacts? I was compelled to try just for the pure principle of it.

Steffanie, all I can say is, they weren't kidding. I didn't tell my wife I was trying it. Literally, in the middle of our "experience," she stopped me and said, "Ok what's going on, what did you take..." - I couldn't believe it! They were right! She couldn't help but to react! Steffanie, you have to find out more about this **New Red Hot Pill!** Now, every time my wife and I are intimate, she asks me, "Did you take the pill?" It's crazy but I had to order a 3 month supply! She won't let me go without it!

In fact, here's the phone number for your readers: **1-800-240-0601**, or they can go to **ITakeRed.com** to check it out. If they call today, they may still be able to get the **FREE SUPPLY** with their order like I did.



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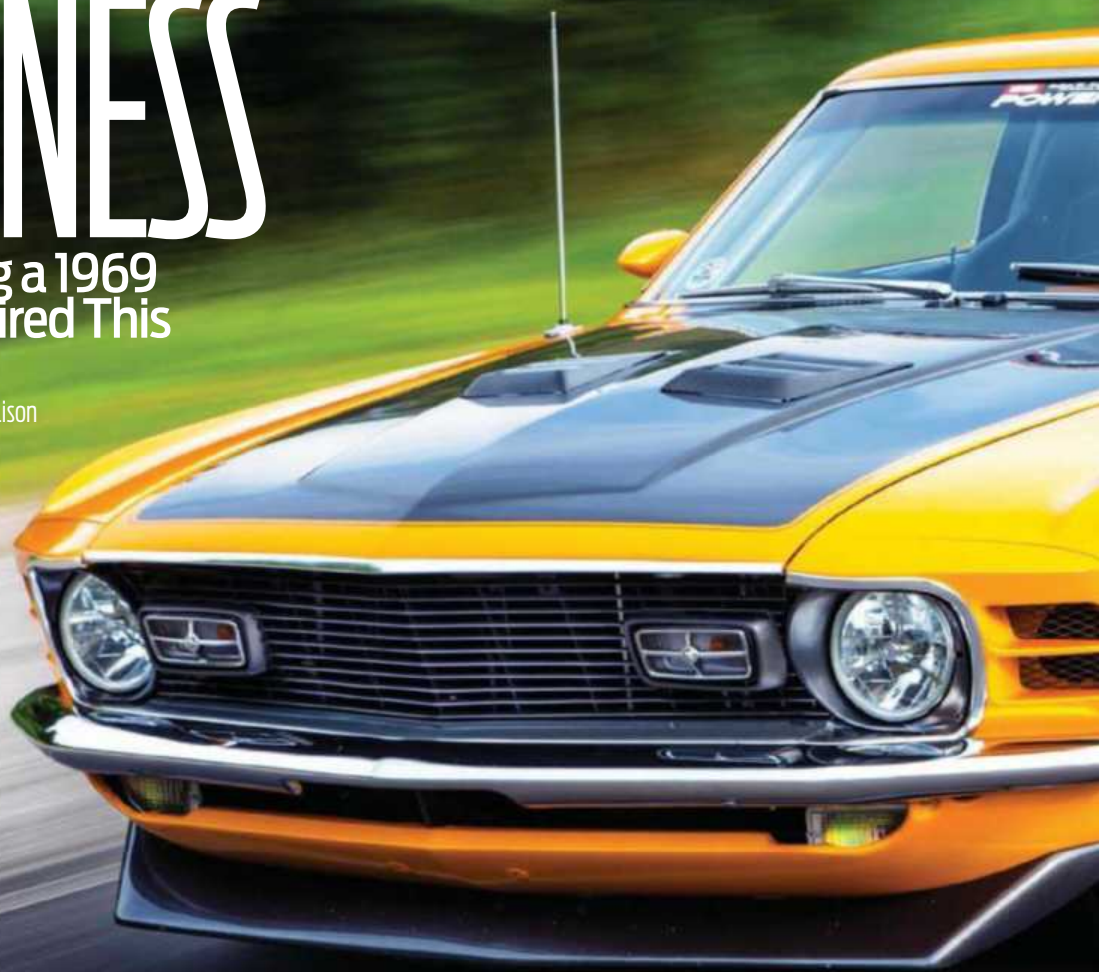
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MID-ENGINE MUSTANG MADNESS

How Building a 1969
Camaro Inspired This
1970 Mach I

✍️ Thom Taylor 📷 Wes Allison





► Bobby Johnson built this mid-engine 1970 Mach I Mustang after the reaction he got from his previous build, a 1969 Camaro. He thought the complexity and quality of his red Camaro would draw accolades and at-taboys. But before all of you Ford lovers pipe up with sarcastic comments, be aware that his Camaro was radical—with late-model Corvette Z06 driveline and suspension. It was essentially a Z06 Corvette hiding under a 1969 Camaro. Says Johnson, “It was way more difficult than this Mustang.” He included all of the features of the then-new Corvette like mega-adjustable heated and cooled seats, all of the original electronics, and a lot more. “It took me four months just to wire the thing,” he says.

But the sad part for Johnson, and the reason he took the approach he did with this Mustang, was that for as absolutely stellar as the Camaro was, it looked like just another red 1969 Camaro. “A guy

would have to look real hard to even begin to see how involved it was, most everyone just passed it by,” Johnson says. If he’s building an incomparable shrine to the Chevy brethren, said brothers should at least take notice—right? He needed an adrenaline shot to the heart-beat of America. He wanted his passion for building unique, exciting cars to stand out.

Johnson likes to build those “different” cars in his 8,000-square-foot shop at his house in Georgia—that is, when he’s not working all day running his paint and body shop. “I work 14-hour days, starting in the body shop and then coming home to work on a project,” he says. “My wife and daughter are into horses, while building a car every 15 to 18 months is what I like to do, so the whole family has their own extracurricular activities.” A busy family is a blissful family.

Bobby’s Mach I started coming together in his head about the time his Camaro was evaporating into the crowd, around 2006. “I bought the drivetrain out of a wrecked 2006 Ford GT and was looking for a car to put it into.” Going mid-engine with the 5.4L supercharged V8



01

and six-speed manual sure was different, but obviously required a radical reworking of the 1970 Mustang.

"This was a real nice, original car—in fact, I used to change the oil for the owner when I was 16," Johnson says. An older gentleman had owned it for decades, but when he became ill he offered to sell it to Johnson, and that's when combining the GT driveline and Mustang coalesced. To some, cutting up a nice 1970 Mach I is like the *Texas Chainsaw Massacre*—with sheetmetal—but Johnson is pragmatic about it. "When you start with a nice car, you end up with a nicer car." And he does virtually all of the work himself, so it saves him time from having to put aftermarket panels onto it. And Johnson's most compelling

01] Even from this angle, the lengthened wheelbase is hard to see. The Evod one-off, knock-off wheels were meant to look like they came off of a Can-Am or road racer from the 1960s. All of the "Mach I" factory identification has been updated to "Ford GT" giving a hint to what lurks inside the pony.

02] Looking every bit like it came this way in 1970, the 2006 Ford GT mid-engine driveline was left as stock, which also lends some faux-authenticity to the presentation. The hatchback feature is also a unique aspect of this build, and according to owner/builder Johnson, was a fairly easy modification.



02



03



04

reason? "Rust makes me tired just looking at it."

Johnson built a jig for the car onto a surface plate in his shop to hold the drivetrain and C6 Corvette front suspension, and then built a new square-tube frame around those components. He wanted to retain as much of the original look of a 1970 Mach I as possible, but with a functional 1969 quarter-panel vent and a lift-up hatch to reveal its hidden, mid-engine magnificence nesting inside. The only concession he made was adding 2 inches to the wheelbase at the rear to give him a little more legroom up

03] Owner-fabbed gas and water tanks, faux-carbon-fiber hydrographic panels, and Avco aluminum radiator in the stock location fill up the former engine compartment. Johnson fabricated the hinges both for the hood and hatch from billet. The Hydroboost power-brake assist is from a 2003 Mustang Cobra. Radiator hoses run through the "driveshaft tunnel" back to the engine.

04] The deception continues to the interior. Stock door panels and stitching on Sparco seats give the impression that everything is stock inside. However, the dash was scavenged from a 2000 Mustang, while the owner-fabbed rollcage hugs the inside nicely and unobtrusively. Johnson's tall frame fits nicely, and long hauls are no problem, which he was adamant about. "I drive my cars, so it has to be comfortable," he says.

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front for what would now be a two-seater. “I drive my cars, and I wanted to be comfortable in long-distance situations,” he says. That part, he nailed. With more than 6,000 miles on the ticker, he says it drives fantastically, is comfortable for his 6-foot, 4-inch frame, and he is easily able to drive Power Tour®-type 400- to 500-mile daily hauls.

Once he built the frame, he added a rollcage and then placed the Mustang’s shell over the fabricated chassis. And we do mean shell. To mate the body to the newly fabbed frame, he first cut out the entire floor and cowl. From there, he welded the body to the structure and then filled in the floor and cowl panels, as well as creating a bulkhead behind the front seats to isolate the engine. He kept the bottom of the body relatively flat, in keeping with the race-car-type construction of the chassis.

Though Johnson was able to use carbon-fiber pieces throughout the car, the majority of what looks to be carbon fiber are actually aluminum sheets dipped into the hydrographic vat to replicate carbon fiber. He created a driveshaft tunnel that mimics what a front-engine car has, but instead of a spinning driveshaft, he packaged the hoses leading from the standard location Avco aluminum radiator to the engine out back. He also snaked some electrical lines through it as well.

He built out the suspension from the Ford GT’s transaxle

01] Lots of neat details can be found sprinkled around the Mustang, but what’s interesting here is that the solid Mach I texture normally residing in the stock tail panel is now cut out and is being utilized as a means to exhaust heat from the engine compartment.

02] Any heat buildup from the radiator is vented out through these carbon-fiber ducts, which look almost factory. Many 1970 Mach I came with the infamous “shaker” hood scoops. Though some of the components Johnson made are actual carbon fiber, the hood and many of the engine compartment panels were hydrostatically printed to give a realistic-looking feature.



01



02



03



04

using C6 Corvette hubs with axles fabbed to slightly narrow the track width from a stock GT, so as to fit within the Mustang’s narrower footprint. Up front Johnson incorporated a Stiletto aftermarket rack-and-pinion that steers C6 Corvette spindles on C6 A-arms, also with a narrower track width than a production C6. Phat Racing coilovers were used front and rear, as were Wilwood 14½-inch discs and six-piston calipers. The Evod one-off wheels are 18x10s up front and 18x12s in the rear, from a design by Eric Brockmeyer resembling Cobra and McLaren wheels from the 1960s. Bridgestone tires are 235/35R20 in front and 345/40R20 out back.

Johnson says for better brake feel he uses electric hydroboost on all of his builds because it works so well, and the one used for his Mach I was scavenged from a 2003 Mustang Cobra.

Once the new front and rear bulkheads were made, Johnson adapted a 2000 Mustang dash inside and used Sparco seats that copy the original 1970 Mustang pattern, stitched by Sammy Freeman. The rest of the interior is stock, including the door panels, headliner, and miscellaneous pieces.

One of the easier modifications was creating the hatch. Johnson welded in the rain channels and machined the hinges. Gas shocks aid opening and closing. Because of the way the rear of the top is constructed, it lent itself to this seemingly difficult modification. Says Johnson, “It’s fun listen-

03] All of the Ford GT components, including the transaxle, was left alone, but note the radiator fan built into the hydrographically enhanced compartment panels to move heat out of the engine compartment. Johnson says the Mustang runs cool in all different conditions.

04] Owner Bobby Johnson handled the engine compartment bulkhead, firewall, floors, frame, rollcage, and all other fab work. The 15-month build resulted in this radical Mach I that from outside appearances looks like it could almost be stock.

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“Rust makes me tired just looking at it.” — Bobby Johnson



ing to ‘experts’ tell their friends how rare the hatchback option was.” For the record, there was no hatchback Mustang from its inception in 1964 up to 1974, when the Mustang II debuted the feature.

Once the Mustang was back together, Johnson performed the minor bodywork that was necessary to hide some of the changes he made and then painted the entire car in PPG 2008 Shelby Mustang yellow. Johnson says he uses PPG products exclusively at his shop and on his own personal projects.

The larger wheels and lower stance help to hide the 2-inch wheelbase extension, and without the hatch up, it’s hard to know what has just pulled up next to you at a stoplight—but you know better than to try a speed contest just from the sound it makes idling.

This isn’t the first 1969–1970

Mustang with a mid-engine conversion HOT ROD has featured. Both Johnson’s 1970 and Terry Lipscomb’s 1969 Mach 40 (HRM cover, May 2013) were started and completed at the same time and were mutually exclusive, so neither builder knew of the other’s similar state of mid-engine mindset. And both are completely different in terms of their overall approach to the mid-engine madness.

At the 50th anniversary of the Mustang in Charlotte, Johnson’s Mach I was chosen as one of the top 10 Mustangs of the event, and it has also won its fair share of trophies at other events Johnson has attended.

Concludes Johnson, “Every time anyone builds a car, he wants to do something different or better than the previous build—it’s just human nature.” This car is a byproduct of that mindset.



HOW RARE IS A 1970 MACH I?

Total 1970 Mustang production was 190,727 units, of which a tad more than 20 percent were 63C Mach Is. All were Sportsroof or fastback body styles—none of the 40,970 units made came in coupe or convertible versions. Engine options spanned from the 351 Windsor two-barrel engines, up to the “drag pack” 428ci Super Cobra Jet engine. □



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


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CRUISE MISSILE

Can We
Drag Race a
2015
Hellcat
Charger
Every Day
For a
Week?



 Elana Scherr  Elana Scherr and Brandon Gillogly

» It started with the 2015 Dodge Hellcat Charger. What would it be like to know you had the quickest four-door in America? Wouldn't you just want to throw all your friends in the back and hit every dragstrip you could find? Sure, we'd had the Hellcat on tracks before, but that was magazine stuff—rented tracks, prepped and expecting us. Would the car be as much fun in the real world if we just showed up at a local test 'n' tune, paid our \$20, and waited in line like everyone else? Would anyone care about a plain Dodge sedan? Would it even be drive-able on unprepped street-car surfaces? What about on the road? Would 707 hp be usable or just a gas-sucking, mosquito-whining, supercharged monster unsuitable to a daily driver? Only one way to find out. We mapped out a route that took us to five different dragstrips on days with open testing, and then we asked Dodge for a Hellcat.





[We threw the Charger Hellcat on the rollers at Addiction Motorsports in Canoga Park, California, and saw 583 rwhp (using the SAE correction). That's a little lower than we expected, but it was a good indication of how the hot summer weather would affect the performance.

It showed up the day before our trip was scheduled. Painted Bright White, the Hellcat Charger looked like a Stormtrooper left his helmet in our driveway. The interior was a strawberry sundae of red Alcantara and contrast-stitched black leather. It seemed an excess of flashiness at first, but after comparing it later with an all-black cockpit, we came to appreciate the pop of color and how it lightened up the car's interior.

Under the hood was the engine everybody's after: the 378ci, 6.2L Hemi, wearing that 2.4L twin-screw IHI supercharger like a jaunty little waffle hat. According to the Dodge engineers, the Charger and Challenger engines are identical, from the iron block to the big ½-inch fuel line that feeds it,

but where the Hellcat Challenger is available with either the six-speed or the eight-speed automatic, the Hellcat Charger can only be purchased with the TorqueFlite eight-speed auto.

Maybe it's that effortless transmission or the heated and cooled eight-way adjustable seats, four doors, and big trunk that lull one into thinking that it's no big deal for three people to spend 40 hours in motion, that 2,080 miles will go by in a flash, that it's totally normal to pull up to the tire place and tell them to stick one plastic-bagged drag radial in the trunk, and the other in the rear passenger seat. There's nothing intimidating about the Hellcat Charger. It's quieter and fancier than its Challenger brother; it



[The Hellcat has an easy menu for adjusting settings, and once you program in your preferences, you can switch over from the default with a quick double-press of the SRT button.

doesn't seem like a troublemaker. We packed up, and the next thing we knew we were on a road-trip bender that left us with dirty fingernails, luggage that smells like burnt rubber, and a credit card that's on fraud alert, because no law-abiding citizen could possibly stop for gas in so many cities in so few days.





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BRAKES



SUSPENSION



DAY ONE

// SACRAMENTO RACEWAY //
// STREET-LEGAL DRAGS //
// (\$15 TO RACE) //

On a Wednesday morning, we met staffer Brandon Gillogly and HRM videographer Kale Eickhart in North Hills, California. We had some concerns about fitting all our gear, tools, clothes, and a set of 20x10 American Racing Wheels clad in 315/35R20 Nitto NT05R drag radials in the Hellcat while still having room for the three of us, but we needn't have worried. The Dodge swallowed our luggage like a whale shark eating krill, and just like that, our big-mouthed behemoth was headed to Sacramento Raceway, 400 miles north of Los Angeles. Gates opened for the evening street-legal drags at 4 p.m.

Sacramento Raceway is tucked out of sight in a crisscross of small roads and horse property. By the time we got there, the front pits were already full and we went straight into the tech line, where the Hellcat was admired and we were scolded for not emptying the car out first. Our apologies were accepted and we found a pit spot behind the stands where we created a mountain of luggage and commenced our first tire change of the trip.

Tire choice for the Hellcat isn't as easy as slapping a set of slicks on a classic muscle car. The huge 13.8-inch vented rear brakes make a 17-inch wheel the smallest that will fit, and 17-inch wheels in the Charger's 18mm offset are not an off-the-shelf item. Bogart Racing Wheels said it could make us a pair, but not in the four days we had available before our trip. American Racing Wheels came to the rescue, next-day-airing us a set of 20x10 Torq Thrust M aluminum wheels. At 29 pounds apiece, they weren't lightweights, but they were wide enough to mount 315/35R20 Nittos, larger than the 275/40R20 tires that we fit on the stock wheels during our last Hellcat Challenger drag test.

Choosing the wheels was only part of the effort. We also had to change them at every race stop. Technically, the drag radials are street legal, but since our route was more than 2,000 miles through the mountains with rain on the horizon, we decided that swapping tires at the track was the responsible choice. A 22mm socket on a battery-operated impact made the job much easier, and by the end of the week, we had it



[Any complaints about the Charger being a big, heavy four-door disappear once you see how much gear it can carry.

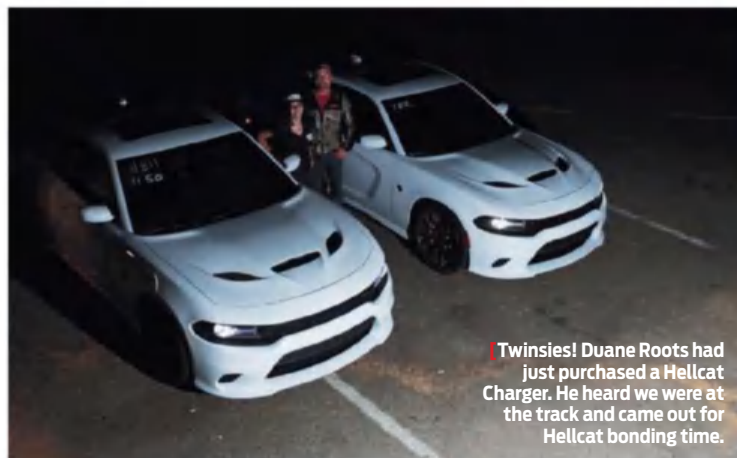


[At Wimpy Burger in Tulare, California, we met our first Hellcat fans. Cathy and Matthew traded us some Wimpy's seasoned fries for a chance to sit in the Charger and rev it up. We got the best part of that deal, Wimpy's fries are fantastic!





[In Sacramento we talked to a bunch of Universal Technical Institute (UTI) students. One was studying diesels and one was a Ford specialist, but both appreciated the chance to check out the Hellcat.



[Twinsies! Duane Roots had just purchased a Hellcat Charger. He heard we were at the track and came out for Hellcat bonding time.



[We ran the Nittos at about 20 psi. With the thin sidewall, you really can't drop it too far or you'll be running on rim.



[One of the coolest things about racing at Sonoma, aside from the impeccable track prep, is that the pits and return road run all along the road course. Very weird to come through the esses and see this!



[Running quicker than 11.50 seconds requires a fire jacket at most tracks, even with a factory car. We didn't have one, so we had to sandbag a bit at the top end.



[At Redding we were reunited with our Hellcat pal from Sacramento, Duane Roots. He'd gone right out after our Wednesday race and bought wheels and drag radials. The track lined us up for a three-round match race and the crowd went wild!]



down to a 5-minute average, at least when we could make it through the swap without getting distracted answering questions about the car.

The Charger was attracting attention even back in the pits, and once we got up to the staging lanes, we were surrounded by people wanting to know what it ran, what it cost, and how it compared to a Challenger. Our celebrity as the first ever Hellcat Charger at the Sacramento track was short lived, as a few minutes after we got in line, a second Hellcat Charger came through the gate, exactly the same color as ours. The owner soon appeared at our window, introduced himself as Duane Roots, and quizzed us about our tire choice, race settings, and how much over sticker we'd had to pay for the car. The first questions we could answer, the last forced us to admit the car wasn't ours.

We're not sure our tire suggestions impressed Roots much, until he saw us run. Our first pass netted us a 11.44 seconds at 124 mph and a warning from the starter that we'd need a fire jacket if we kept running under 11.50. Roots, who had been understandably reluctant to drop another \$1,000 on wheels and tires (after paying \$10,000 over the Charger's MSRP in the first place), started feeling differently after spending an evening wrangling his monster on street tires to 14-second e.t.s. It's disappointing to be unable to floor a car until half-track, but with big horsepower and 275/40R20 all-seasons, driving a Hellcat is a Zen-like exercise in self-restraint. Even on the wide drag radials, you can't just slam open the throttle on the last yellow. It's not that the Nittos

weren't sticky—the gravel we had to pick off each time we packed them up proved they were—it's that the minimal sidewall on a 20-inch tire just can't absorb the shock of the launch like a 15-inch slick. There's no wall to wrinkle, so if you hit it too hard, you just spin. For all its brute power, the Hellcat is not a race car for brutes.

After torquing the stock wheels by cellphone light, we waved goodbye to Sacramento and aimed toward Sonoma Raceway, a mere 80 miles away. We hadn't made any hotel plans, never being sure where we'd be along the route come pumpkin-time, but we figured it wouldn't be hard to find rooms on a Wednesday night. We hadn't planned on there being a huge forest fire in the area that forced evacuations and filled hotels from Sacramento to Santa Rosa. After numerous rejections, we finally found one room in Davis, California. It had one bed and one couch. There were three of us. One thing about driving and changing tires all day, it makes it easy to fall asleep on a floor. We slept like happy, racing babies.

DAY TWO // SONOMA RACEWAY // // NHRA TEST 'N' TUNE // // (\$100 TO RACE) //

As we sat in miserable traffic on the two-lane road leading to Sonoma, California, we were soothed by the thought of running a well-prepped dragstrip. The other stops on our tour were all street-race nights, but our Thursday stop was the test day for an NHRA

Sportsman divisional race. With sub-10-second classes running, the track would be well conditioned, and hopefully sticky enough to launch our Hellcat. As it turns out, we did get the best 60-foot time of the week, a 1.66, but the hot weather kept us in the 11.20 e.t. range. As SRT engineer Jim Wilder said when we reported our times, "The middle of summer is not record-breaking season."

Being surrounded by so many purpose-built race cars did highlight the Hellcat's impressive dual-purpose nature. We were one of the faster cars in the Stock group, and unlike the other machines, we hadn't come in on a trailer. While the other drivers monitored electric fans and battery tenders, we enjoyed our free time between rounds, cruising around the pits in YouTube car-show host Mike Musto's 1969 Dodge Daytona. Musto came out just to see the Hellcat on track. No car guy is immune to its charms.

By 3 p.m. our run card was filled and the afternoon temperatures made it unlikely that we'd beat the morning's time of 11.21, so we said our farewells to Musto and headed for Portland, Oregon, 616 miles north.

DAY THREE // PIR // // LATE-NIGHT DRAGS // // (\$30 TO RACE) //

Rather than bomb straight up Interstate 5, we veered off at Mt. Shasta, California, to take the smaller, winding U.S.-97 through national forest land. Not only did it offer us absolutely fantastic pine forest and mountain peak views but also gave us a chance to evaluate the Dodge on a curvy mountain road. Would so much horsepower in such a heavy car prove deadly on the turns? Just like on the dragstrip, some self control is required, but there aren't very many cars that should be floored in the middle of a turn. We ran all through the mountains with no traction control on and when we spun the tires outside Ken's Sporting Goods and Liquor store, it was only because he asked us to.

We ended up at the gates of Portland International Raceway (PIR) an hour early, time we spent chatting with some of the other racers. We weren't expecting a lot from Portland. It's primarily a road course, with the dragstrip run on the straightaway for street-race-style, late-night drags on Friday





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and Saturday nights. It wasn't as sticky as Sonoma, but the Hellcat loved the cool night air and rewarded us with the quickest pass we'd see all week, an 11.18 at 125.6 mph. Best of all, it got us the win against the other fast modern muscle car, a modified 800hp ZL1 Camaro. We would have liked to whittle it down, but we'd borrowed a fire jacket from the very generous Sgt. Bernie Meyer, and he needed it back. Still, we made a very satisfied group as we left the track that night.

DAY FOUR // CHAMPION RACEWAY // // STREET-LEGAL DRAGS // // (\$45 TO RACE) //

We woke up to rain, another challenge for our high-powered commuter. The Hellcat offers numerous nannies to protect you from yourself should the conditions be unfriendly to a 700hp herd, but rather than drop the horsepower to 500—possible in the settings menu even without the black key—we just used some common sense in throttle con-

trol. We watched Portland disappear in the rain-speckled window without incident.

We were scheduled for Redding Dragstrip's street-legal Saturday-night race, but as we drove we found out that Champion Raceway in Medford, Oregon, was running a daytime diesel drags and that there was a gas class we could enter if we made it there before the lanes closed. Do you think a CHP officer would forgive speeding if you explained you were late for a drag race? Thankfully, we didn't have to find out, 'cause they either didn't see us or they couldn't catch us. We pulled through the gates in Medford with 15 minutes to spare. It was 105 degrees, and nobody felt like lying in the gravel for the tire change, so we teched and went to staging on the street setup. To say the run was slippery would be a bit of understatement. About halfway down the track, we finally got it floored and picked up a 12.19 for our efforts, losing the round to a radical race-only Chevy Luv. He ran an 11.77. If we'd changed tires, we could have beat him. Oh well, a bad day at the track is better than—you know.

DAY FOUR // REDDING DRAGSTRIP // // STREET-LEGAL DRAGS // // (\$15 TO RACE) //

We threw our gear back in the car and got back on the road for Redding. Through the trip we'd been casually sharing our multi-dragstrip plans with anyone who asked. By Saturday afternoon, it was well known that we were bound for Redding and that we needed a fire jacket to pass tech. When we pulled in the gate, we were presented with a jacket and offers of several others. Racers are kind people.

We're sort of embarrassed to admit this, but in Redding we made a dumb racing mistake. We'd been wondering what the Hellcat might do without the restriction of the air cleaner. In an old-school car, pulling the air cleaner can be worth a couple tenths, and a couple tenths was all we needed to tap the 10s, something we wanted even more than Brandon wanted to try every disgusting flavor of snack in every gas-station stop,





which is to say, a lot. What we didn't think about is that modern cars are smart and need some time to adjust to a change in fuel or air intake. Removing the air cleaner lost us some top-end mph and gave our old pal from Sacramento, Duane Roots, the stripe in a Hellcat versus Hellcat matchup. Yup, Roots had gone to his speed shop the day after our race and ordered a set of American Racing Wheels and Nitto NT05Rs, and he proceeded to school us with our own racing techniques! Well played, Duane, well played.

Redding was a great track, full of friendly people and very enthusiastic racers. We match-raced the other Hellcat to packed stands, like we were Tommy Ivo and Don Prudhomme. It was a blast, but it kept us at the track till after midnight, and we had to make it 584 miles to Auto Club Dragway in Fontana, California, in order to meet our full five-day racing goal. The Charger may be an easy-driving machine, but it isn't a self-driving one. By about 3 a.m. we were convinced the white line in the road was a living thing, the way it kept moving around. It was time to stop. We nabbed about three

hours of sleep in Sacramento and then took turns snoring on the tire in the back seat as we tested the speeding warnings all the way down I-5 to San Bernardino County.

DAY FIVE

// AUTO CLUB DRAGWAY //

// STREET-LEGAL DRAGS //

// \$20 TO RACE //

Incredibly, we made it to the track in time to get a run card, although we were warned that we might only get a single pass. That was fine, one was all we needed. If we thought Medford was hot, Fontana made it seem like the arctic. Sitting in the lanes was torture, and for the photo and video crew, running around with gear between the start line and our pit spot, let's just say nobody was feeling awesome. We spotted another Hellcat, a black Challenger whose owner, Jay Anderson, told us he'd managed an 11.19 that morning, but was packing up for home now that the track was so hot and slick. When we pulled up to stage, the water box

was empty, but we were too fried to complain. We'll blame that dry burnout and our general exhaustion on the mid-12-second pass that resulted. Back in the pits, we tried to muster the energy for another run, but one look at Kale and Brandan made it obvious that mutiny was on the horizon if we didn't get home, or at least get dinner. Sitting in the air conditioning of a Farmer Boy's around the corner from the track, we reflected on our adventure. Our plan had been for five tracks in five days—we'd done six. At every stop, we'd been greeted by people who knew about the car and were excited to see and talk about it. Other than changing tires, we'd been running low-11-second passes with no effort, and the road miles had been joyful and comfortable. What would the barnstorming drag racers of the 1960s have given to have such a marvelous machine, capable of toting crew and tearing up the track no matter where you go? HOT ROD is lucky Dodge wanted its car back, or this crew might have looked up the next track and gone for seven tracks in six days, then eight, then nine, then infinity. □



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• Weighs 73 lbs.

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62326/62670
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67181/62300

Customer Rating

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61197/62393
38847 shown

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SIZE	LOT
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LOT 61607/62389
94635 shown

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62894/68149/62380/62511

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6.5 HP (212 CC) OHV HORIZONTAL SHAFT GAS ENGINES

LOT 60363/69730/68120
LOT 68121/69727 shown
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ADJUSTABLE SHADE AUTO-DARKENING WELDING HELMET

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OUTRUN YOUR FEAR

Wrecking and Racing a 1957 Chevy at
the **2015 NORRA Mexican 1000** Is the Best Thing
We've Ever Done





› Six miles from the finish line. We'd made it 1,294 miles across the Baja desert. We'd lost a bumper and a decklid and the entire passenger-side quarter-panel. We'd swapped engines in a borrowed open-air mechanic shop in Loreto and now six god-dang miles were going to keep us from finishing. One of the mechanics became attached to the tequila stand. Another wouldn't even look at us, afraid we might notice some dust or something in his eyes. Trying not to lean back into a cactus, we slouched on a low stone wall in downtown San Jose del Cabo, dizzy from sun and lack of sleep as we watched our competitors get the checkered flag. A few days ago, those single-seat buggies and retro Broncos were eating the dust of the Azunia Tequila 1957 Chevy, but now we were done. Stuck in the silt 6 miles away. Race over.

It had started with so much optimism—literally with a party at a small hotel in Ensenada named after horsepower. The walls of Horsepower Ranch were hung with paintings of rooster-tailing buggies and black and white photos of Hollywood celebrities in open-faced helmets. Famous off-road racers like Walker Evans mingled with first-timers. Bruce Meyers, inventor of the Meyers Manx, was raising a beer to an Australian team that had entered the race in a newly restored Manx Tow'd. The NORRA Mexican 1000's nickname is, "The Happiest Race on Earth," and certainly that evening it seemed we were gearing up for nothing more than a fun run along the ocean.

The Mexican 1000 is a retro race, what the Baja 1000 was before the big money, big crowds, and chase helicopters. It's been running since around 2010, organized by Mike Perlman—son of the original Baja race founder, Ed Perlman—and some dedicated enthusiasts, like filmmaker Marty Fiolka. It was Fiolka who'd suggested we cover the race, and during the kick-off party he pointed out a lifted Bel Air behind the Mariachi band in the ranch's circular driveway. Yes, we were planning to bomb through the desert in a Tri-Five Chevy. The Mexican 1000 has classes for various open buggies, 4x4 and two-wheel-drive trucks, and motorcycles. The 2015 entries added up to about 82 different vehicles, the greatest number being in the sensible vintage truck category, and in the category we'd be racing, Vintage Production Sedan, a whopping three competitors.

Of the three cars in the class, the Bel Air was hard to miss. Even if it wasn't cherry-bomb red with "Rippin' Rooster" graphics painted prominently on each door, there's something about a 1957 Chevy on 35-inch General Grabber tires that tends to stand out, even in a crowd of off-road race cars.

We sidled up to the Rooster's owner and driver, Jim Riley, and asked him if he knew that HOT ROD was joining his team for the week. He nodded yes, but his eyes said, "First I've heard of it."

He might have been startled, but you don't win off-road races by being slow to recover from surprises, and after asking if we knew our left from right—"If you don't, I'll mark your hands with a Sharpie"—Riley introduced us to the rest of the team and said, "Meet us at the Punto Moro Hotel at 5:30 a.m."

We had no idea where the Punto Moro hotel was, but 4 a.m. on race day found us hoping the cabbie did, as we hurtled along the coast in the dark. In Baja, it seems one only drives slowly if one knows where one is going. A mysterious destination should be gone after full throttle, the sooner to know you've missed it, and can turn around. After the U-turn and a long driveway, we were delighted to see the Rippin' Rooster and fellow Vintage Sedan class racer, the 1971 Snortin Nortin Nova, parked on the Punto Moro's immaculately kept lawn, lit by cell phones and chase truck headlights. It was the first time we would see the sun rise over the Azunia crews. It would not be the last.

Riley was already in his racing suit, patiently explaining the GPS buttons to his co-driver for the day, 15-year-old Duran Morley. There would be two timed dirt stages, and Morley would switch out after the first one to give another crewman a chance at the passenger seat. The goal was to get two different co-drivers in per day, keeping them fresh and alert. Riley, an accomplished racer in Trophylite spec-off-road-race trucks, could handle the demands of a full day in the car, and enjoyed sharing the experience with off-road newbies. The Nova's driver, Rick Johnson, was also trying out a new co-driver, his teenage daughter, Ashley. Johnson and Riley have been racing together for four years, swapping crew members, cars, and wins. The Nova fired up first, artillery-loud and fluorescent yellow against the gray-blue backdrop of the early morning Pacific Ocean. The Rooster followed a few seconds later. "You ready?" asked crewman James Pfeiffer, as his brother, Wayne, wedged our little duffle bag between a spare tire and a gas can in the back of the Ford chase truck. Feeling very much like a duffle bag, we wedged ourselves in beside some extra safety gear and there was no turning back.

The term "chase" truck is misleading, it's really more of a "rush ahead and meet them there" truck. While the Chevy made the ceremonial start, we hit the highway, driving as fast as Baja traffic and roads would allow. The goal of the chase vehicle is to get

“Locos naturales alegres [which translates as ‘Crazy, but in a good way’].” — Mechanic Jorge Romero, describing the Azunia team

to the rendezvous points before the race car so the crew can top off fuel or make any adjustments the driver needs. The result is a madcap dash followed by minutes-which-feel-like-hours of waiting for your car to come around the corner. Occasional crackles of conversation came through on the radio. “Chris, FYI,” said Riley’s disembodied voice. “We don’t have any brakes.” This was immediately followed by, “Don’t worry about the brakes, we’re ahead,” and then the Rooster roared around the corner all vintage body roll and dust and glory and Riley gesturing for the crew to top off the gas and let him go. Of the three cars in the class—the 1957 Chevy, the Nova, and a VW bug—the Bel Air seemed to be in the lead. The brakes appeared to be good enough, so we piled back in the truck and headed for the next stage exit, kilometer 128, a gas station. Our job was to claim and hold a convenient gas pump, a task easier said than done at a busy stop on a public highway. As the Pfeiffer brothers dodged increasingly irritated Mexican motorists, the rest of the team stayed glued to the radio, from which we learned

that the Nova’s chase truck had gone back to assist with a broken ball joint, and nobody had seen the Rooster, which seemed to have taken a wrong turn somewhere. The VW, our greatest competition, fueled up and buzzed out, taking our lead with it.

Another competitor mentioned that the course arrows were wrong, something that can be attributed to fate or local tricksters, but is apparently quite common. There was some discussion of heading back to look for the car, but before a decision could be made, Riley radioed that he was back on course, and soon after, he pulled into the station. Morley climbed out of the car, sweaty but beaming. John Lucas climbed in, and the Pfeiffers checked the oil. We didn’t have a funnel, but a pen knife and an empty plastic water bottle worked fine to top off the Rooster’s small-block Chevy. Wayne adjusted the expensive LED light bar—one of the few modern luxuries on the car—and Riley peeled out in a Tasmanian Devil dust cloud.

The off-road route took Riley and Lucas through the desert along the ocean. In the

chase truck, the highway wound through the high desert, the landscape growing ever more alien, with single-stalked Boojum trees making Art Deco question marks in a green-brown landscape punctuated by the bright-yellow glow of cactus spines. At the rendezvous point, we waited. We waited and waited. Cars came and went. The crowd of support vehicles thinned out. The sun went down. Someone mentioned the Chupacabra, and everyone laughed, but nobody ventured quite as far from the group for pee breaks.

Finally, the ’57 emerged from the darkness. The stage had not been kind. They’d gotten stuck in a knee-deep silt bed and lost the bumper to an unexpected dip in the road, the Rigid light bar so carefully adjusted at the last stop probably gracing the front of some lucky farmer’s pickup truck by now. They’d managed to rewire the vintage overhead roof lights and make it to the meeting point, but the car was in rough shape as we lit its way for the last 20 miles to the check-in point. One of the big hits had broken one of the leaf-spring centerpins, and the whole rear axle was tweaked to one side. Riley crab-walked it into town and parked it while the crew discussed what to do before the next morning’s start. Bahia de Los Angeles (Bay of LA) is not exactly a teeming metropolis. There were no nearby parts stores or race shops to borrow a hoist or get new spring hangers. Even if there had



been, it was well past 10 p.m. by the time we arrived in town. The guys looked at the car, and at each other—we'd all been up since 4 a.m. that morning. There was a slight rush of breath, a collective sigh, and then everyone got to work. James Pfeiffer limped the Rooster onto the patio of our rented beach house. Lucas pointed the work lights from the truck at it, and Wayne P. pulled out the brake clean and began looking for the fasteners under the layers of desert dust. "Don't stay up too late," Riley told me. "You're co-driving tomorrow. We need to be at the start line by 8 a.m." It was nearly 2 a.m. We left the guys working under a very questionable homemade jackstand system and stumbled into bed.

We awoke to catch the tail end of the sunrise. A pelican floated by in the bay. A fish jumped. The Rooster sat back on four wheels, square and clean. Exhausted mechanics slept on every flat surface in the living room. Riley came downstairs looking rested and cheerful. He held an extra race suit, gloves, and helmet. "Tape your passport into your pocket," he said. "They can't medevac you over the border without it." With that, we suited up and headed for the start line.

As we skidded and skipped over the silty sand leading away from the beach house, Riley explained the co-driver's duties. Using the GPS and the stage notes, we needed to tell him if the road ahead would be turning





right or left, and how dramatically. Seemed easy enough until we actually got onto the dirt stage and then we were going so fast and the GPS was so small and the pen we were using to mark course notes disappeared somewhere under the seat and the borrowed oversized helmet started sliding down, and the borrowed oversized gloves made it hard to move the GPS points and so we took one off and then it got lost somewhere under the seat, too, and we were still going so fast and there wasn't anything but dust clouds up ahead of us even when we were brave enough to open our eyes.

Eventually, we developed a method of holding the helmet up with one hand and bracing in the seat with the other, which made it possible to at least see the GPS. We had a tendency to lose track of how fast we were going and send Riley around tight turns with little warning, but at least we generally got the right and left part right. As we passed some of the slower cars, the dust cleared, and during a few rare straight sections of road, we were able to marvel at the forests of Cardon catci, towering several stories high, glimpses of turquoise blue sea visible through their upward-reaching arms. "Isn't it beautiful?" Riley asked, and we nodded, right before a rise with a hard blind turn. "Which way? Which way?" he asked as we got airborne. "Left! Hard left!" we yelled, and were as surprised as anyone when that was correct.

We were diligent about the directions after that, although it soon became clear from Riley's cheerful banter that he really didn't need a co-driver. He chatted about the landscape and the finer points of the tequila business and we kept our eyes on the map and answered, "Slight right, no, wait, hard right." We passed all the single-seat buggies and several trucks without incident, but as we came around a Jeep Cherokee, a

rocky ledge gave way under the rear of the Chevy and we got a split second of being door to door with the Jeep, whose driver looked about as startled as you would, if you'd suddenly collided with a 1957 Bel Air whilst driving full speed through Mexico. "Are they OK?" asked Riley. "Are you OK?" Since the answer was yes to both, we kept going. It wasn't until we stopped at the start of the highway section that we realized how much damage our Jeep tap had done: the entire right-side quarter-panel—already more bondo and fiberglass than metal—was hanging off the frame in shreds like lace drapes in a house full of kittens. While Riley went to apologize to the Cherokee driver, the crew took a cutting wheel to the Chevy's crumpled fin.

Lightened of guilt and bodywork, we climbed back in what remained of the Rooster and headed back out for the second dirt stage. The route was wider than the morning's section, and Riley was on the gas, slaloming cows and schooling us in the unwritten rules of open-course racing. "If there are people in the middle of nowhere, it's because there's either a jump or a silt bed," he said, skirting a rock the size of a dishwasher. "Either way, you slow down and watch out." We drifted around a corner and found ourselves headed right for the grille of a late-1970s Ford truck. Its front fenders were folded into Mexico's least delicious taco, wheels no longer attached, drivers thankfully standing safely to the side. They waved us past and as we balanced out the warring emotions of sympathy for them and relief that it wasn't us, Riley made a concerned noise that sounded a lot like, "Should we have more than 10 pounds of oil pressure?" It was sort of a moot point, the section of road had narrowed, flanked on either side by dense and prickly patches of Cholla cactus—also known as "jumping cactus," due to its nasty barbed spines. The



Cholla is capable of leaping out to grab the unwary traveler, or pop the tires of the unwary driver. There was nowhere to stop. We continued on.

About 10 miles from the end of the timed section, the road widened, and Riley pulled off. We removed the hood, noting that a hoodpin seemed to have fled into the desert, maybe to join the various other pieces of Chevrolet we'd lost during the week. Another water bottle was sacrificed to the funnel cause, but the oil refill

didn't seem to be enough to appease the greedy gods of racing. When Riley went to start the small-block, it clicked and whirled in a slow grind to a dead battery. About this time, Baja performed one of its magic tricks. A silver Subaru wagon appeared out of nowhere and a lanky gringo jumped out of the driver seat brandishing a towrope. "Do you need me to pull you out?" he asked. "I'd love to get a photo of my Subaru towing this."

"We'd hate to get that photo," Riley answered, "but we could use a jumpstart."

The Subie maneuvered closer to the Chevy, and after a few false starts, the Rooster fired up. It only took a few seconds of listening to it rattle, though, before we realized that Subaru man would be getting his tow photo after all. The Chevy sounded like eight children learning snare drum. We were toast.

Figuring we were in for a slow crawl for the remaining 10 miles, we figured there was no need for helmets. We figured wrong. The Subaru driver seemed to think we were still being timed, even on the end of his towrope. We saw the GPS read 43 mph before we went completely blind from flying grit and sand. The dust didn't settle until we were crossing the stage finish and getting the depressing DNF stamp from the course workers. The fact that we came in like a fish on a string didn't seem to bother the crowds of local children who waited eagerly at each stage point and demanded "steekers" of crew and drivers. "Race stickers are like currency during these events," the boss had told me, sliding handfuls of HOT ROD stickers at us before we'd left, and he was right. Not only children, but adults, even police officers accepted Azunia and HRM stickers as if they were \$20 bills, and good luck to the careless crewmember who had too many visible at once. You could be eaten to bones in seconds.

Riley's team was well prepared, and he signed posters and shook little hands as the crew prepped the trailer for the crippled Rooster. Baja loves "La Carrera," viewing it not only as a source of income but also of pride. At every stop, no matter how remote, people were waiting and waving as the cars came through. If there is to be a next generation of hot rodders, we'd be wise to look for it in Mexico. The only way Riley was able to clear the trailer of car-crazy niños was to invite them all inside the Chevy as he bump-started it up the ramps. Here you'd probably be sued for letting children within 20 feet of a race car. In Baja, we made them local legends. The littlest co-drivers.

With the car on the trailer and all children well-stickered, it was time to figure out what to do. We were only halfway through the race. The day had been hard on everyone. Bruce Galien stood next to his 1968 Ford fire truck and called it quits due to a blown head gasket. Rick and Ashley in the Nova had suffered ball-joint issues again, and the damaged Ford we'd seen before our own calamity was still out there in the dirt, resting on its broken control arms. Beers were drank. Tequila was drank. "It's a small-block Chevy, right?" someone asked. "There must be 350s all over. Can we just buy one?"

"I think I know a guy in Loreto who might know a guy," said Riley, and then we were on the road, whipping the trailer behind the F-250, playing chicken with the big rigs in the mountain passes. Riley was singing along with an absolutely filthy iPod mix. We fell asleep on the dusty pile of racing suits and dreamed Pfeiffer was a chauffeur for Britney Spears. Apparently, we woke up once to tell him this. We pulled into Loreto

around midnight and Riley's guy's guy was there, telling us in a mix of Spanish and English to meet early the next day to go buy the engine. If this were a movie, you would see the hotel security guard in the background, in hearing distance of the conversation. That became an important detail when the first guy was a no-show the next morning.

In yet another bit of Baja magic, the security guard overheard our need and called his father-in-law, who had a 1988 Silverado that wasn't for sale, but wasn't *not* for sale either, and it had a running 350 beneath the hood. This he would sell to us for \$800, and his good friend would rent us his shop for 1,000 pesos—that's less than 100 U.S. dollars. We'd miss one day of racing and have to take the DNF, but we could, in theory, do the swap, tow to the start of the last stage in La Paz, and finish the race in San José Del Cabo. Riley looked thoughtful. James Pfeiffer looked inspired. "Wayne and I haven't had our chance in the car," he said. "I'll buy the engine."

Loreto is a beautiful little town, famous for white-sand beaches, whale watching, and a sleepy, friendly pace of life. We were certainly sleepy as we unloaded the car and tools in Jorge Romero's open-air garage attached to his home on a dirt side street on the outskirts of the main town. The Silverado sat in the corner, ready for pillaging. We broke into groups, half on the truck and



OUTRUN YOUR FEAR

half on the Rooster. Romero hung back, but as the engine fluids and blood started to flow, he and his employees stepped in here and there, with sawdust, with a broom, with just the right wrench. Despite the stress and lack of sleep, the team members were in good moods, speaking with each other and Romero's crew in a mix of Spanish, English, and charades. "Righty tighty!" shouted someone. "Don't tell me how to live my life!" came the reply from the underside of the pickup.

Word spread quickly through the neighborhood that La Carrera was in town, and by midday there were close to 30 locals leaning back against the wall to enjoy the show. After lunch, we took stock of our progress. Both engines were out. Everyone's hair was gory with transmission fluid and sawdust. Armed with a notepad, the cleanest of us were sent to the auto-parts store, where we learned through trial, error, and Pictionary skills how to say "zip-ties," "gasket material," and "carb cleaner" in Spanish.

When we returned, it was to discover the truck engine bolted in the Bel Air, but without a gasket for the water pump, water poured from the block like Niagara Falls. We caught Romero looking thoughtfully at the now-empty beer carton. Our eyes met. He smiled, "You are like a Mexican mechanic," he joked when we suggested the homemade gasket. With the idea approved, he took over with the expertise of a racer, which he is, piloting a trophy-winning Triumph in the sand drags, often against the owner of the Silverado, who runs a 1975 Camaro. With the cardboard and a tube of sealer, the Rooster was pronounced ready, and we headed for La Paz very literally bruised and bloody, but unbeaten.

We managed about two hours of sleep after checking in to the hotel, and then it was time to race again. The cars were lined up along the ocean, an ocean so clear you could see small rays and fish darting beneath its surface. Above the waterline, the remaining competitors eyed each other's battle scars.



The Rooster was bumperless, bodyworkless, practically just a cage on a chassis—powered by a 20-year-old, work-truck engine that probably hadn't been floored in its whole life. Just seeing it drive to the starting grid was an almost unbearable joy.

The first half of the day went fine. Wayne navigated, Riley drove without incident, and the entire female population of a small town thoroughly enjoyed watching James Pfeiffer change into his driving suit for the driver swap at the halfway point. Everyone loves a race-car driver, especially one who'll dance in his underwear for an audience of abuelas. Then we got to the finish line and heard the bad news. The Rooster's engine was oozing oil from every seam. The guys were stopping every hundred yards to add more water. When they hit the last sand patch, everything just let go. They were stuck. They were empty. We were done.

Half the crew headed back to retrieve



the Rooster. The rest of us sat in the shade of the finish-line banners, barely speaking. Bruce Meyers, on hearing our tale of woe just smiled at Lucas. "In 1968, I crashed in a solo buggy and spent 22 hours alone in the desert with two spiral-fractured legs," he said. We stopped complaining about our bad luck.

Course workers began to clear the finish-line cones. "Wait, wait!" cried Lucas. "There's still one more car. There's still our car." And then, there it was, coming around the corner on a towrope, Pfeiffer behind the wheel. Someone unhooked it and it coasted forward, and then everyone was running toward it, our team, the Nova team, random onlookers, and they pushed it the last 60 feet and up the ramp to the checkered flag, and people were cheering and Pfeiffer and Riley were toasted with overflowing plastic cups of beer and shots. We may have lost, but there was nobody who felt more alive at that moment than the team of the Rippin' Rooster.

There are different kinds of wins. There is the sort that has "First Place" carved on it. You can put those on the mantle, and they're easily read and recognized. That's winning a race. Then there is the sort that gets etched in your being, that betters you, replaces a bit of you that was once fear with confidence. That's winning at life. That's why we race. □



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Above: Factory Five '33 Hot Rod now available with 2015 Ford Independent Rear Suspension.





THE TIME DON PRUDHOMME FILLED IN FOR STEVE MCQUEEN

What Happened When Drag Racers
Tony Nancy and Don "The Snake"
Prudhomme Ran Baja in 1968

Elana Scherr HOT ROD Archives

► We were researching Baja racing for the NORRA story on page 54 and noticed Don Prudhomme's name on an entrants' list from the 1968 running of the Mexican 1000 (what the Baja 1000 was called in the early days). Since we're HOT ROD, we can do insane things like call up "The Snake" and ask him, "Hey, did you ever race Baja?"

"Oh yeah," he said. "Long time ago, with Tony Nancy, because Steve McQueen couldn't. I still have my stuff, my uniform, the stuff I wore."

Wait, what? Back up a second, how did two drag racers end up off-roading bedecked in Steve McQueen's Solar Plastics film company logo? We found photos from the race in the HOT ROD Archives, printed them up, and tossed them on a table in front of Snake. We'll just let him take it from here.





“You just follow the guy in front of you. Follow the dust. Wherever the dust is at, that’s where we’re pointing. That’s what you do, pretty much.” — Don Prudhomme

“Tony was putting a car together for Steve McQueen. Remember that movie called *The Thomas Crown Affair*? All that stuff off-road was in. So Tony was putting this car together for McQueen and shortly before the race, McQueen couldn’t make it, a movie, *Bullitt*, or something he was doing, so Tony asked me to go with him, as the co-driver.

“Tony said, ‘OK, go with me, all right?’ And he says we gotta go down and do what they call, not a dry run—a prerun. And I’m like, ‘What’s a prerun?’ and he goes, ‘Well, we’re going to go check it out.’ And I go, ‘OK, fine’ and the only thing I knew about Mexico was Tijuana and drinking beer underage. So he’s all, ‘We’re gonna get a great Mexican dinner and it’s gonna be so great!’ We didn’t even have a bottle of water when we went across the border, we didn’t know! Just out, driving for miles and finally, late at night,

I’m starving and I’m looking forward to this great Mexican restaurant and we’re just surrounded by dirt and cactus. There’s a light way off in the distance and we ended up sleeping in the truck until the next morning when this place opened up, little place, dirt floors, and they made us something to eat. We had some tortillas and some beans and that was it. That was my big dinner. I had no idea what I was getting myself into and neither did Tony. You can imagine in 1968 or so, what it was like down there.

“I forget who built the chassis, I don’t think it was Kent Fuller, but Tony put it all together with the Porsche engine and stuff. Tony was an upholstery guy, and he did work for McQueen, like his Ferraris and stuff, some of his work you can still see at the Petersen Museum, in that XKSS green Jaguar—that interior was

done by Tony. Tony fitted him for the seats. Most of us couldn’t even get a car like that, let alone get a car like that and tear the seats out. Genuine leather seats, McQueen, that’s how he would do things.

“How I met Tony was through drag racing; he would do seats for you if he liked you, in your drag car. If he didn’t like you, you wouldn’t even get in the door. He was older than me, but nobody really knows how old. He always looked great. He took me in, Tony actually took care of me, he looked after me. He had a shop off Ventura Boulevard. Kent Fuller had a shop in the back of the complex, he was doing frames; Tony was up front, and Tony actually owned that building—he rented to Fuller—and that’s where we hung out. I mean, you’d go in there, you’d see James Garner, Steve McQueen, [Tommy]





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THE TIME DON PRUDHOMME FILLED IN FOR STEVE MCQUEEN



“I still have that watch. It’s a Rolex. God, look at that. It was the first thing as I recall that I ever bought myself. ‘Mongoose’ [Tom McEwen] bought one, too, when we both started making a little money drag racing. The ultimate was Rolex watches and the shoes were alligator. Alligator loafers.”



Ivo, Kent Fuller, whoever, I mean that was the place to go. If you were going down the road, you’d pull off, go into Tony’s place, and say, “Tony, what’s going on?” You never knew who you’re going to run into, but if you weren’t one of the guys, you didn’t get very far, you know? I’d been in the dirt on dirt bikes, Tony rode too. We never did the off-road cars, but didn’t even think anything about it. ‘Oh man, no problem, it’s got a wheel and tires, no s**t, no problem.’ We didn’t know.

“Steve’s company was Solar Plastics Engineering, you can see that on the shirts. Tony was doing work for him, like these seats; Tony made these seats, and McQueen was involved in that, too, and that’s one of the reasons he was doing this, he was going into business, selling this stuff, aftermarket stuff. We had those driving suits and jackets. We looked good at the starting line. I didn’t have my team that dressed up for drag racing, couldn’t afford it. I don’t think I was into the Hot Wheels deal yet. That was the way McQueen would roll, though—the



“Look, spark plugs, someone was working on it. Wasn’t me.”





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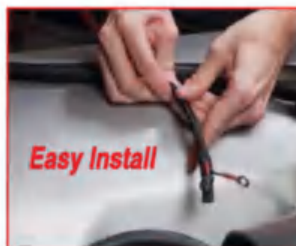
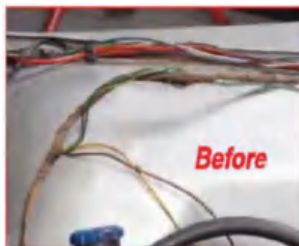
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People who have never been to Baja, they don't get it."

— Don Prudhomme



best of everything.

"This was in the early stages [of off-road], this thing was very, very cool in its day, you know, but look how little it was, look how big we are! We started, we ran to outside

Ensenada, I'm thinking, 100 miles or so—it was still on the pavement, and it burned up. I said to him, 'You smell something?' and he goes, 'Yeah.' And the thing's just 'errrrrrrrrrrr' [he rolls the r's out slowly to

a stop]. It ran out. Never even made it onto the dirt, which I'm embarrassed to tell you. And haven't been back since.

"Never even got to really test the car. It wasn't like we went out to Palmdale and ran

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["See this? This is the airbox, and the big problem was that there wasn't nearly enough air coming into it, because it sealed it off in the back here and that was our downfall—it burnt the engine up. It didn't have enough air. The thing got done like most racers do going to Baja, a day and the night before the race started."]



["Look at the shocks here, there's like, no travel. See the springs here? Probably had 2 inches of travel. Good thing we didn't make it, we'd probably have killed ourselves."]




the s**t out of it like you're supposed to. I'd never even been in it until Tony was like, 'Jump in, let's go.'

"After we burned up, McQueen, his guys had a plane there and so we got on the plane, licking our wounds. We didn't even want to report back to McQueen that the thing burned up, so we went down to La Paz—that's where the race ended at that time—and they have a celebration for people or whatever. James Garner was there. He didn't act like a big deal. He liked us because we were racers, so he liked to hang around us as much as we liked to hang around him. He was a real-deal guy. I was a kid, maybe 23, they were all older than me. They were all goofin' on me. That's the days before I knew anything about 'don't drink the water.' I drank the water. And I hugged the commode in this s**ty Mexican bathroom and just died. The rest of it is a blur. They ended up rebuilding the car, and that's all I know. I wasn't a part of it after that. It wasn't drag racing to me, that's what I was interested in.

"I wish there was more to the story, it was just that."

Don't know about you guys, but we think that's a pretty good story as is. So tuck that one away for bench-racing trivia night, and don't drink the water. ■

A male mechanic with a beard, wearing a grey Dickies work shirt and dark pants, is working on a car lift. He is holding a yellow tool and looking up at the car. The background shows a garage with various tools and equipment.

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TRACK 'STANG

A Purpose-Built 1967
Mustang Fastback
Built to Stomp
First-Gen Camaros

✍️ Alberto Hernandez 📷 Jesse Kiser



» Getting Mustang enthusiasts to agree on what the perfect ponycar buildup is would be impossible. There are just so many great ideas, so many great examples, and so many different purposes to build that you'd have a hard time nailing down "the one." But even with more than 50 years of hot rod 'Stangs in the wild, there are still a few cars that stand out. The guys at Total Cost Involved Engineering (TCI) in Ontario, California, have assembled a 1967 Mustang

fastback with the intent to do just that.

Ed Moss, owner of TCI, purchased his fastback in Bend, Oregon, with the objective of building it into a quick street car, but he admits to having set up the car for some pretty aggressive autocrossing and road racing. After three years of preparation—and as Ed confesses, "too much money," invested—the finished result shows his commitment to the outcome.



01 A JME Enterprises dash insert was fitted with Auto Meter gauges. A Grant GT steering wheel, Wilwood pedals, and a Lokar shifter provide the driver controls while a Vintage Air A/C system keeps the cockpit livable.

02 A stainless-steel fuel tank by Rick's Stainless Tanks was installed in the trunk. Along with the tank are an Optima battery and the RideTech TQ ShockWave system (hanging above the fuel tank).

03 Ron Mangus Hot Rod Interiors took care of the interior, which features a combination of saddle-colored leather and suede. A TCI-built rollcage and Crow Enterprize's seatbelts keep Ed safe.

04 Hidden behind the front wheels are some massive Wilwood 14-inch slotted rotors with Wilwood W6A six-piston calipers. At the back you'll find another pair of Wilwood 14-inch slotted rotors, but these are accompanied by four-piston W4A calipers.

05 Driving all the belts is a Zoops Posi-Trak serpentine pulley system.

06 In the engine bay, three support bars keep the front stable: two connected to the firewall and one connecting both lateral fenders. The cowl-induction air-filter housing was fabricated by TCI and hides a K&N air filter.

07 The long-tube headers on the 427ci Ford Windsor were custom-made by TCI. Following along the exhaust, there are a Magnaflow X-pipe and mufflers. The exhaust exits through the sides of the Mustang before reaching the rear wheels.

08 Ed Moss and his 1967 fastback have participated in the Optima Ultimate Street Car Invitational twice (2013 and 2014). Ed didn't provide any excuses for not ranking number one in either event, but did say he was a rookie.

09 The car rolls on hefty Le Mans wheels by Billet Specialties. The fronts are 18x10s wrapped in Michelin 295-series tires and in the rear are 18x12s with 395-series tires.

10 A custom-plumbed breather system prevents engine oil from sloshing out of a traditional PCV system.





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BUILT FOR BATTLE

As a two-time participant in the Optima Ultimate Street Car Invitational, the car's guts have been optimized for running on the track. Beneath the bulging hood is a Smeding Performance 427ci Windsor capable of producing 546 hp and 540 lb-ft of torque. The 7.0L Ford is backed by Tremec T56 Magnum six-speed, and a QuickTime bellhousing shelters the McLeod RST dual-disc clutch and McLeod flywheel. A Currie Track 9 axle is used out back to hold a 31-spline Truetrac limited-slip differential.

The factory suspension was completely scrapped in favor of a short-long arm (SLA) coilover front end with rack-and-pinion steering and a torque-arm rear suspension. Both suspension systems were developed on this car, and TCI now sells these parts to the public. The car's ride height was significantly lowered (4 inches up front and 3 inches in the rear) using RideTech TQ coilovers with Hyperco springs.

Not all of Ed's attention went into the suspension and drivetrain. With the help of Danny Davis from Danny's Paint Shop, Ed reworked the car's classic lines to cover the massive new rubber and improve the car's aero.

IT STILL COMES DOWN TO FORD VS. CHEVY

While the Mustang was built to showcase his company's products, Ed's a real Ford lover and needed this car to egg on a rivalry between him and his company's general manager, who's a diehard Chevy guy. Ed wanted the car to prove that Fords were superior. Did he? Well, that feud has yet to be settled, but Ed did mention that soon he plans an inter-company competition at California Speedway. Rest assured that regardless of whether Ed or his general manager wins that battle, TCI customers will benefit from the performance feud. □

2014 CAMARO 7.0L Z/28 **VS.** 2014 SUPERCHARGED 6.2L CAMARO 1LE



2014 CHEVY CAMARO Z/28

PRICE AS TESTED	\$75,000
ENGINE	7.0L LS7
TRANSMISSION	Six-speed manual Tremec TR-6060
REAR GEARS	3.91:1
BRAKES	15-inch Brembo carbon-ceramic, six-piston, front/four-piston rear calipers
WHEELS	Aluminum 19x11 (front); 19x11.5 (rear)
TIRES	Pirelli PZero Trofeo 305/30R19
RATED HP/TORQUE (AT CRANK)	505 hp/470 lb-ft
TESTED HP/TORQUE	438 hp/420 lb-ft
LAP TIME BIG WILLOW	1 minute, 32.44 seconds
WEIGHT	3,820 pounds (non-air-conditioning car)

Ultimate Fifth-Gen Camaro: Buy It or Build It?

✍ Elana Scherr 📷 Jessica Walker

➤Versus, versus, versus—there are more automotive “This vs. That’s” floating around the Internet than on the docket for *Judge Judy*. We love a good matchup, but when it comes to buying advice, are there really people out there trying to decide between an SS and an M3? Between a Camaro and Porsche? We don’t think so. If you’re a Chevy guy, you know you want something wearing a Bow Tie, so your big question isn’t Z/28 or 911, it’s which Camaro, and then, buy it or build it?

To help you with this difficult decision, we threw our testdriver, Kevin Wesley, into Chevy’s ultimate track package Camaro and a modified version of its low-buck stripper, and asked him how they compared to each other.



2014 LINGENFELTER/MAGNUSON 2014 SUPERCHARGED CAMARO 1LE

PRICE AS TESTED	\$51,000
ENGINE	6.2L LS3 with Magnuson supercharger
TRANSMISSION	Six-speed manual Tremec TR-6060
REAR GEARS	3.91:1
BRAKES	Brembo 14-inch iron rotors, four-piston front/four-piston rear callipers
WHEELS	Forged aluminum ZL1 20x10 (front); 20x11 (rear)
TIRES	BF Goodrich Rivals 285/35R20
SHIFTER	ZL1 six-speed
RATED HP/TORQUE (AT CRANK)	426 hp/420 lb-ft
TESTED HP/TORQUE(AT WHEELS)	525 hp/450 lb-ft
LAP TIME BIG WILLOW	1 minute, 34.47 seconds
WEIGHT	3,860 pounds (base 1LE curb weight)



[R.J. Gottlieb has been racing his 850hp 1969 Z/28 Camaro, Big Red, since 1987. After testdriving the new Z, he bought one and dubbed it Little Red.



2014 CAMARO Z/28

The last time we had a Z/28 on track, it snowed (HRM, June 2014). The weather was much kinder to us this go-round. Speaking of kind, we'd like to thank our test car's owner, Big Red driver R.J. Gottlieb, who brought his personal 2014 Z/28 to the track, handed the keys over, and let us beat on it. Wesley, who's fussy about seating, had no complaints about the setup in the Camaro, declaring the Recaro race buckets and suede, flat-bottomed steering wheel, "very, very nice." He wasn't as complimentary about the rest of the interior, and certainly the dash is a big, featureless slab when compared with a Corvette's carbon,

silver, and leather details. But the Z/28 wasn't designed to impress with stitchwork and inlay, it was intended to be a naturally aspirated hero on the racetrack, so every detail in its design is dedicated to consistent, fast laps. The Camaro's 7.0L LS7 is down 87 horses compared to the supercharged LS3 in the Lingenfelter/Magnuson Camaro, and Wesley missed the instant torque, but he applauded the Z/28's handling, declaring it very responsive with "tons and tons of grip." Other cars may be faster around the track, but the Camaro's simplicity and consistency might make it the better choice for track days.

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01] With a naturally aspirated engine, the Z/28's 505hp LS7 isn't going to win the dyno races against a supercharged LS3, but there's a lot to be said for the consistency of an unblown engine.

02] Part of the Z/28's magic is from its shocks, designed by Multimatic Inc. and inspired by F1 racing. Unlike the magnetic ride dampers in a Z06, the spool-valve technology in the Z/28 allows for a very specifically tunable shock—from the factory. That technology and the carbon-ceramic brakes explain much of the Z/28's \$75,000 price tag.

03] While the handling of any car is a system, depending on multiple components, there's no replacement for really good rubber. The Z/28 rolls on 19x11 front, 19x11.5 rear wheels and wraps them in Pirelli PZero Trofeo 305/30R19 tires; \$2,200 can get you a set of the Pirellis for your own car, assuming you have enough fender clearance to wear them.

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Midwest Street Cars & TV's "Street Outlaws"



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[When Magnuson's Matt Hatley heard Chevrolet was bringing back the 1LE package, he went straight to the dealership. "I've always loved the factory handling packages, and because the 1LE has many of the same parts as the ZL1, we knew it could handle the horsepower from adding a blower kit."



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LINGENFELTER/MAGNUSON 2014 SUPERCHARGED CAMARO 1LE

Maybe you're looking at the Z/28 and thinking, "What's the fun in a prebuilt hot rod?" For you, we brought out Matt Hatley's Lingenfelter/Magnuson Camaro 1LE. With a package made up of a track-tuned suspension as well as shifter and drivetrain goodies from the ZL1 and a price of \$3,500 over the base SS; the 1LE is an affordable alternative to the high-dollar top dogs. As we found on track, with the addition of a Magnuson supercharger, race pads, and BFG Rival tires, the 1LE was snapping at the heels of cars nearly twice its price. In fact, as it was running about 2 seconds off the Z/28, Kevin said that replacing the decent BFG Rivals with the Z/28's stellar Pirellis and brakes could put the two Camaros neck and neck, although it would add quite a bit to the "budget build."

The truly incredible thing about the cars we tested is how adaptable they are in almost any situation. Hatley, who drives the 1LE every day, has more than 25,000 miles on the year-old car. Even the Z/28, the most "race" of factory street cars, would be a perfectly acceptable daily driver—and downright comfy if you're used to classic cars. We asked Wesley what made a car good on track, and his main requirement was ease of driving, something he mentioned as being excellent in both of the cars we tested.

"You can't have a car you are afraid of, regardless of how fast it could be," he says. "The more confidence you have, the faster you will be in any car." With that in mind, who's the winner? For Camaro lovers, everyone wins. Somewhere in here, there's the car for you, even if it's the one you build to beat the ones we tested. **□**

04 Magnuson's Heartbeat kit includes the Eaton TVS 2300, twin dual-pass charge-air-coolers, coolant-circulation pump, heat exchanger, and all the hardware. Hatley also upgraded the fuel pump to a Lingenfelter unit and added LS9 injectors. It all fits under a factory hood. From outside, you'd never know the Camaro was anything but a clean SS.

05 One of the only options Hatley added to his 1LE was the Recaro seats. "It makes a big difference in your concentration level to not have to be holding yourself in or bracing against the door while you drive," he said. The shifter is the slightly shortened-throw from the ZL1, part of the 1LE upgrade.

06 Hatley chose the BFG Rivals over the 1LE's factory Goodyear Eagles because he says he prefers the Rivals' track characteristics. The brakes are the stock Brembos, but Hatley upgraded to braided lines and race pads. "One of the best things about this car is that there's so much adjustability in the factory alignment," he said. "We were able to add 2.5 degrees of negative camber in the front without having to buy camber plates or anything. Even the alignment shop was amazed."

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Weaver Customs' Award-Winning

✍️ Brandon Gillogly 📷 Wes Allison

UNIBODY

1962



F-100



[Weaver Customs sprayed the 1962 F-100 in a metallic Chai Bronze and Silverstone Gray two-tone with a Laser Red pinstripe, all using Axalta paint.



Even most car people don't realize that Ford built unibody 1961–1963 F-100s pickups. The trucks, which feature a full chassis like a typical light-duty truck, aren't traditional unibodies the way we refer to unibody cars—it's just that they don't have a removable bed, making the cab and bed one long piece. Their unique construction is enough of a novelty on their own to make people scratch their heads and wonder whether or not it's a custom modification. Weaver Customs took one of these F-100s to such extremes of customization to remove all doubt.

Randy Weaver and his wife, Sydney, call the truck Django—they just liked the way the name sounded—and it was supposed to serve as a shop truck for Weaver Customs in West Jordan, Utah, just south of Salt Lake City. Considering the derelict truck was pulled from a reservation in sad shape, complete with a few bullet holes, it seemed like a fitting role.

As is the case in most any custom vehicle build, plans changed. From a rusted and worn-out hulk, the F-100 started taking shape slowly in the back of Randy's mind. Soon the shop-truck plan was tossed and the Weaver Customs shop tore into the build as Randy saw the potential in the old Ford. With the 2015 Detroit Autorama just seven months away, all hands were on deck.

With a low stance in mind, the top was chopped 1.5 inches, but the windshield was left uncut. Instead, the glass and pillars were laid back and one-piece side windows were installed with doorframes to match, giving the truck a subtle yet noticeably sportier look.

Once the body modifications started, no panel was left untouched. The hood was cut back at the rear where it met the fender to allow for a custom billet aluminum emblem that mimics the shape of a late-model Ford Super Duty. With the bed already integrated into the body, Weaver took things further by skinning the tailgate flush, shaving it completely smooth and widening and





shortening the bed by about half an inch. Massive wheeltubs were added in the bed to clear a set of wide rear tires, fitting of a sporty hauler. The bumper is gone, and in its place is a rear diffuser that fills the area normally reserved for a license plate.

For the right stance, the truck's chassis was ditched in favor of RideTech coilovers and a four-link rear on a custom chassis built from 2x4-inch rectangular tubing that accommodates a Ford front suspension from a Crown Victoria, along with 14-inch Wilwood brakes, 20x8.5-inch Boze forged wheels, and 245/24R20 Pirelli P Zero rubber. The rear wheels are a whopping 24x15 inches wide with deep lips fitted with Pirelli 405/25R24 tires. After dropping the truck, the front fenders were moved both forward and outboard 2 inches per side for more wheel coverage and a more aggressive stance.

Considering both the truck's reservation roots and Randy Weaver's ranch upbringing, the crew at Weaver Customs settled on a Western theme that starts on the exterior with leather belts and buckles and continues to the interior, where distressed Bordeaux leather seats by JS Interiors are matched

UNIBODY



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with leather-belt door pulls complete with silver buckles and tips. A custom dash was hand-fabricated in steel, just like the rest of the truck, and houses Dakota digital VHX analog gauges and switches for Vintage Air climate control. The final touch is a highly embellished Colt revolver as a centerpiece in the console. Just ahead of the shooting iron is a B&M Bandit shifter that connects to a full-manual valvebody 47RH four-speed automatic transmission. Sounds like something you'd find in a heavy-duty Ram, doesn't it?

Under the hood is perhaps the most striking modification: a 1996 5.9L Cummins 6BT turbodiesel with compound turbos. The engine proudly tells you something is different about this F-100 long before you notice the body modifications, as the whine of two turbos leave no doubt that the engine is serious business. Indeed, thanks to plenty of boost from a compound BorgWarner S400/S500 turbo setup and a potent 500hp shot of N₂O from Nitrous Express, it's good for around 1,000 hp and almost 2,000 lb-ft of torque.

Randy cruised the truck along the Gulf Coast for our photo shoot and the truck was well behaved, with none of the poor manners you'd expect from a 1,000hp street car. There's little hesitation to build boost, and when it does kick in—even without nitrous—it makes the truck accelerate at an impressive pace. We've seen a lot of recent show vehicles that up their shock factor by bringing a whole lot of power along with their custom bodywork, but Django is the first to do it quite like this. □





01 This reveal in the hood allows for a Super Duty-inspired custom emblem.

02 On a factory F-100, this is where you'd find the license plate, but Weaver Customs fabricated a diffuser to match the truck's racy new look.

03 A custom-fabricated manifold feeds boost through huge runners, and the fuel rail and stainless steel lines you see add a huge kick of nitrous.

04 Running a diesel means no vacuum boost for brakes, so Weaver Customs went with a mechanical master cylinder from Wilwood.

05 The custom triple-bar grille is reminiscent of a late-model F-150 and the custom bumper uses trapezoidal openings that match the rear.

06 A pair of BorgWarner turbos feed the 5.9L 12-valve Cummins. The engine covers and plumbing are all painted in a low-gloss brown and gold that complements the exterior.

07 The 24x15-inch Boze Forged wheels wear 405mm-wide Pirelli rubber. After turning the compound turbos, exhaust is routed through 4-inch Flowmaster exhaust into 5-inch tips that exit just ahead of the rear wheels.

08 The tailgate on an F-100 would have been recessed and stamped "FORD" in huge letters. Now it's flush and shaved to eliminate all seams and gaps.



Step by Step: Making an ARP Fastener



01

01 Fasteners begin as spools of wire. ARP buys wire years in advance to ensure it has the materials it needs. Foundries in the Northeast provide most of the company's steel, although some hard-to-find alloys are sourced from Europe and Japan. Forklifts drop the spools onto fixtures that allow the wire to feed into the forming machines. Once the wire is dropped in place, it's coated in a lubricant to ensure it feeds smoothly.



02

02 This machine cuts and cold-forms the wire to length and begins the bolt-forming process in four additional steps that hammer the steel to create the hex head, shoulder, and shank. The wire is cut, moved to a die, hammered, moved to the next die, and so on.



03

03 Here are the steps involved, from cut wire to full-formed hex head and shoulder. Note the copper coating, which further lubricates the forming process.

04 Depending on fastener length and volume, bolt heads can also be hot-formed. This bolt is heated



04



05

in an inductive coil before being moved into a huge press that forms the bolt head.

05 Before it heads into the furnace, ARP stands bolts up in a tray. The bolts are stood up because if they were piled in, the bolts in the middle of the pile could be insulated by the bolts surrounding them. Note that there are still no threads. ARP threads all of its bolts after hardening for better strength.



06

06 The furnace heats the bolts and then quenches them in oil to harden them. The quenching oil is cooled to remain less than 180 degrees Fahrenheit. When the bolts come out, they are very hard but brittle. The bolts enter an oven to temper the steel, making them more resilient.



07

07 The bolts have to be perfectly straight for strength and even clamping. Heat-treating can warp them slightly, so ARP uses a couple of different processes. This machine was designed to roll threads, but ARP has repurposed it to straighten studs. The hardened plate with the horizontal bars rolls the studs as they fall vertically.



08

08 These studs have already been through the roll-straightening process. You can see the stripes it left behind. They are being fed into a lathe-like machine that trims them along their length. This machine cuts just a bit off the diameter to true them.

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Making an ARP Fastener, Cont'd



09

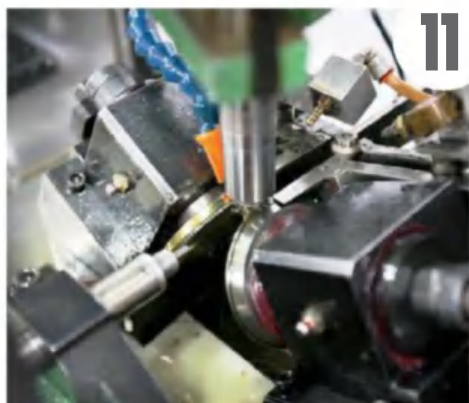
09 ARP cleans its fasteners by either shot-peening or by using vibratory polishers. These massive polishers use varying media in three steps.



10

10 Because rolling the threads into a bolt causes their diameter to grow slightly, these machines remove a small amount of material so the finished thread diameter will match the shoulder diameter.

11 This machine applies force to the bolt while spinning it on dies that ride on the fillet of the bolt head. This imparts a stress to the bolt, increasing its strength.



11

12 These three dies are highly adjustable to make the threads perfect. Threads are pressed into the bolt shaft, causing the steel to both move out of the thread's valleys and head up to form the peaks. Because the bolts are hardened, this is a tough process for the dies, which are replaced frequently.



12



13

13 These inspection stations are located at various places on the manufacturing floor and are used to check the thread's critical dimensions and angles.

14 Also on the shop floor is a quality-control office, where several employees inspect fasteners throughout the day.



14

15 Another room tests bolts to failure. This fixture tests bolts in tension and measures the amount of force required before it will no longer return to its original dimensions.

16 When the fasteners are finished, they move to ARP's nearby packaging warehouse. Each shrink-wrapped card and each box are filled by hand and must rest on a scale that ensures each component is included in the package. When the right components are included, the scale display turns green and a label is printed that is used to seal the box.

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Brandon-Gillogly



15



16

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02



Foolproof Fuel Delivery Holley Has the Fuel Tank Solution For Every EFI Swap

03



Fuel. It's the one source of energy every engine needs to make power. It doesn't matter if you want to make 100 or 1,000 hp, it all starts with a consistent fuel supply. Traditionally, that fuel is stored in a tank under the rear of the car and pumped forward to the engine. Yet how well that fuel gets sucked out of the tank and delivered to the pump is one of the most challenging aspects of all fuel-system design.

Whether you've swapped in a fuel-injected engine that requires a high-pressure fuel supply, are launching hard on the dragstrip, or pulling high-g's on the track, you know how tricky and expensive it can be to keep your fuel-delivery system supplying consistent fuel pressure. In the past, you had to dump upward of \$1,000 into a custom fuel tank or run at least half a tank of gas to prevent fuel starvation and getting air in the system—until now. Holley has come up with a solution to this problem in the form of its HydraMat fuel pickup.

The HydraMat comes in numerous sizes to fit any stock or after-market gas tank. It works like a widespread sponge, absorbing fuel from every corner of the tank and eliminating the issues of fuel starvation or air entering the fuel system. The surface tension of the fuel seals off any area of the HydraMat that's not immersed in liquid, while its fluid-wicking technology absorbs any fuel that comes in contact with the mat. Magnets keep the mat in contact with the bottom of the tank at all times. This makes it possible for the HydraMat to pick up any amount of fuel from anywhere in the tank and transfer it directly into the fuel system without the introduction of any unwanted air. Whether you're accelerating, braking, or cornering, fuel will be in

01 Holley's HydraMat is a fuel-pickup technology that sits on the bottom of any fuel tank and efficiently draws fuel. HydraMat connects to the inlet side of your fuel pump and also acts as a pre-filter.

02 The HydraMat (right) next to a commonly found in-tank GM fuel pump pre-filter. The HydraMat uses the same fuel-absorbing technology that's been around since at least 1981 and used in GM EFI cars since 1986, only spread out to maximize its capabilities.

03 The HydraMat spreads out across the bottom of the tank, where it can work most effectively.

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04



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06

07



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Holley offers the HydraMat in numerous rectangular and cross shapes and sizes to effectively fit most gas tanks. Prices vary based on size, ranging from \$140 for an 8x3-inch rectangle to \$700 for a 30x14-inch rectangle. Other HydraMat options include fuel-plumbing pickup sizes: $\frac{3}{8}$ -inch NPT (which is equivalent to $\frac{1}{2}$ -inch inside diameter or -8AN), $\frac{1}{2}$ -inch NPT (which is equivalent to $\frac{3}{4}$ -inch inside diameter or -10AN), and -10AN fuel fittings. Multiple fuel pickup fittings are available for motorsport applications and the larger HydraMats. **► Taylor Kempkes**

04] The HydraMat is able to draw in fuel without any air entering the system with only a corner of the mat immersed in liquid, as evidenced by the clear pickup tube.

05] Holley offers the HydraMat with either $\frac{3}{8}$ -inch NPT, $\frac{1}{2}$ -inch NPT, -8AN, or -10AN pickups with up to three outlets per mat in certain configurations.

06] The HydraMat can be used in fuel cells as well as traditional tanks. The size of mat you choose is determined by how much can be stuffed into the sending-unit hole in the top of the tank or cell.

07] Even if space is available, the effectiveness of the HydraMat means a smaller mat can be used.

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Daily Driver Diaries Repetition



My mom had this super-hilarious joke when I was a kid. At mealtimes, she'd sigh and say, "Again? I just fed you yesterday." Very funny, Mom, now make with the string cheese and goldfish crackers. She would make the same joke to the cats, who found it about as amusing as we kids did.

As an adult, I find myself sounding much like my mother when it comes to maintenance on the daily drivers. "Again?" I'll say to the Polara, "I just tightened the rearview mirror a year ago, how can it be loose again, and both you and the Opel need oil changes? I just changed it... 6,000 miles ago. Oh."

What people new to old-car ownership don't understand is that a project car is never done. I'm not even talking the constant desire to mess with a running automobile to make it faster, prettier, or non-running—that's just standard hot rodding behavior. I'm talking about the yearly, monthly, or daily repairs that a daily driver demands as small screws come loose, voltage regulators fail, and the replacement fails, and that replacement fails, or the window jams, or the door sags on its hinges, or the transmission leaks. Again.

It's not that you've fixed things poorly, it's simply that parts get used up. It happens whether you're driving the car or not, you just tend to notice that the hoses have cracked when you're pouring out gasoline in the cruise-in parking lot. Time to change them—again.

►HOTROD.COM/Elana-Scherr

[They say practice makes perfect, so I guess the benefit of daily driving is that you get awfully good at finding and fixing weird little cracks, and poor grounds, and wiggly mirrors, and, of course, oil changes.]



HOTROD.COM/2016/JANUARY/ 97

Thom On Design

How the 1965 Chevy Became the 1966 Chevy



1965



1966

HOT ROD Archives

Stamping out sheetmetal or aluminum bodies is an art. It's industrialized manufacturing, but it's art, too. General Motors was leading the way in the 1960s with ever more complex forming of sheetmetal, with deep draws and larger, sculpted panels, to the extent that at times it delayed launches of cars—like the 1970½ Camaro. The rear quarter-panels were so complex they would crack. Manufacturing of the second-generation Camaros was halted for months—why do you think they didn't come out until midyear?

But this is about the 1965 fullsize Chev-

rolet. The designers had come up with a peaked front fender that seamlessly turned under and back down to the front bumper. They wanted it stamped without the requisite die-cast caps that were normally needed up to that time to finish off a front or rear fender in a complex fashion. The designers did not want that coach line where the cap and fender joined, and it was up to the body engineers at Fisher Body to figure it out. Well, they couldn't. Various attempts and dies were used to finish the fender seamlessly, but the sheetmetal still cracked in various places

as the metal turned under. Production was being held up, and that was a huge problem. Finally, the 1965 front end and fender were redesigned to make stamping it easier, while Fisher Body continued to work out the problems. For 1966 it succeeded in producing the front fender the way Chevy designers wanted it for the 1965 models. So the 1965 front end was a compromise, and the 1966 front end was what Chevy really wanted for 1965. Funny, I always liked the 1965 better.

►HOTROD.COM/Thom-Taylor

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How Do You Machine Ford V8 Nonadjustable Pedestal Valvetrains For Screw-in Studs and Adjustable Rockers?

If you're running a big mechanical cam, production Ford V8 cylinder heads with nonadjustable, pedestal-type rocker arms can be modified to accept a fully adjustable valvetrain by machining at right angles to the existing rocker-arm pedestal-bolt axis (not the head-deck surface). Any machine shop can set this up; with care, it can even be done in a home garage if you have a decent drill press, levels, and patience. The table lists the amount to mill off the boss for various Ford engines that use pedestal-style rockers. The diagram, based on official Ford Racing drawings, illustrates the 351C/351M/400 pedestal configuration with its compound valve angles. 429/460 pedestals are similar. Note that on all of the above canted-valve engines, the milling dimension baseline is the flat trough in the U-shaped

pedestal boss, not the outside legs of the U. With 302/351W-type pedestals, measure from the top of the pedestal.

➤ HOTROD.COM/Marlan-Davis

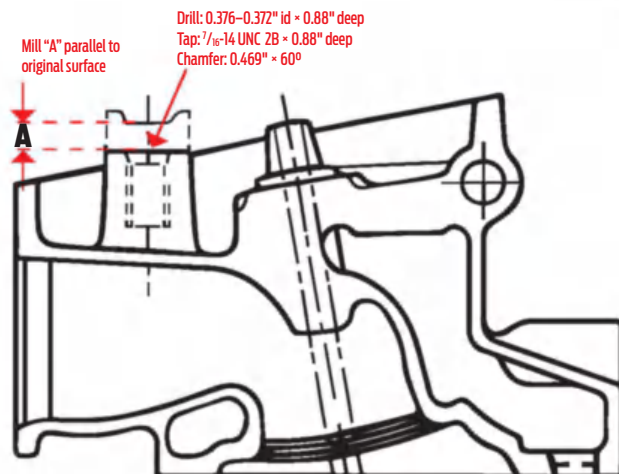
ROCKER STUD BOSS MILLING DIMENSIONS

Milling dimensions correspond to diagram callout "A". All dimensions in linear inches.

ENGINE FAMILY	DIMENSION A
All 302/351W	0.230
All 351C/351M/400	0.300
429/460 (1968-1972)	0.230
429/460 (1973-1995)	0.300

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[To convert nonadjustable, pedestal-style Ford V8 valvetrains to a fully adjustable valvetrain with screw-in studs and guideplates, machine as shown in this diagram and the accompanying table.

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A match made in gearhead heaven: Franklin, Wisconsin's Duane Searles and wife Lora love wrenching together on their cars.



Well, at least it looks like the real McCoy: The Searles' 1970 Camaro is painted to resemble an infamous Baldwin Stage 3 car.



There were starting, idle, and midrange issues. All cylinders cranked at only 110–120 psi. Cranking speed rpm wasn't steady, either.

The 454 in Duane Searles' 1970 Camaro Cranks Hard and Runs Rough with No Power. We're Gonna Fix It.

✍ Marlan Davis

📷 Norm Brandes, MSD, and Powermaster

THE COMBO

In 2008, UPS big-rig driver Duane Searles bought a 1970 Camaro that was painted to look like a legendary Baldwin Stage 3 Camaro. Built and sold back in the day by Long Island, New York-based Baldwin Chevrolet, real Stage 3 Camaros were guaranteed to run 11.70-second quarter-miles or Baldwin would refund the purchase price. But the car was a replica in paint only; as received by Searles, it came with a mild 350 small-block in place of a real Baldwin car's high-perf 454 Rat motor. Searles' motor was backed by an equally mild TH350 auto trans and stock torque converter that transferred power back to a 3.08:1-geared 10-bolt open rear-end. Searles did upgrade the car with a 454 big-block he bought on eBay, headers, an Edelbrock RPM Air-Gap high-rise dual-plane, and a generic electronic distributor and ignition system. He left the rest of the drivetrain stock.

THE PROBLEM

The new motor never ran right. Searles explained, "When I foot-

braked the car, the idle would drop to 400 [rpm] and wanted to conk out. I played with the initial timing, but then it would idle too high. It would push the car to 30 mph if I took my foot off the brake. People told me I had a vacuum leak, the distributor was off a tooth, the ignition module was fried, the balancer wasn't accurate—everyone had a different answer. I checked all these things and they seemed fine. I even put a PerTronix ignition module in the distributor, but it made no difference.

"I lived with it for two summers. By spring 2015, I'd had enough. There was now a ticking sound. In the midrange, it would sorta miss or skip. Sometimes it cranked lazy. I try to solve my own problems, but I was out of ideas and finally decided to seek expert help."

THE INITIAL DIAGNOSIS

Searles is located only about 40 miles away from our favorite Chicago-area rescue facility, Norm Brandes' Westech Automotive in Silver Lake, Wisconsin. Brandes fixes anything, early or late, conventional or comput-

erized. We knew Searles would be in good hands, so he drove the car over to Brandes' shop under its own power.

"When the car arrived," Brandes says, "it idled rough. We quickly determined the fuel mixture was off. We adjusted the mixture and put it on our Mustang chassis dyno. It broke up right away and couldn't make a full run. We immediately went to a compression check. It only cranked at 110 to 120 psi. That's way down and indicates we need to look further for an internal engine problem."

"The next step was a cylinder leak-down test. Seven out of eight cylinders had fairly high cylinder leakage, between 15 and 19 percent. Cylinder No. 1 had nearly 30 percent leakage. That's not good! We squirted oil in the cylinder through the spark-plug hole and repeated the leak-down test. If a ring is broken or just not sealing, the oil should reduce the leakage percentage or raise the cranking compression temporarily; if it doesn't, then the problems are in the valve-seating area or the head-gasket area. In this case, there was almost no change in the values. We checked to see if there was any water in the oil

or bubbles in the coolant—there wasn't. That left a valve-sealing issue as the likely problem.

"During the cranking tests, sometimes the engine kicked back. It would crank over smoothly, then suddenly and randomly drop 50 rpm in crank speed. There was a weird metallic sound, but not all the time. We checked the starter draw; it would spike abnormally high to 300 amps when the problem occurred. Searles was also running lots of initial timing—about 18 degrees. It took that much to get any response out of the low-compression engine. Firing too soon can sometimes cause kick-back because the engine is working against itself as the piston rises on the compression stroke. However, by itself, 18 degrees initial shouldn't have been enough to cause the problem."

The cranking issue could indicate an ignition problem, a starter problem, or both. "We elected to look at the distributor first," Brandes continued. "We removed the offshore-made distributor and checked it in our distributor machine, where we observed an occasional double fire, with the timing changing 10 to 15 degrees when this hap-

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Westech Automotive's crew had their work cut out for them. Here, tech John Wheeler checks for noise coming from an ailing cylinder.



A double-firing distributor caused starter distress and cranking problems. MSD to the rescue with a complete ignition makeover.



Ignition and starter fixed, time to find out what's wrong in the midrange: Discolored rockers point to a serious valvetrain issue.



Cylinder No. 1 leaked down more than 30 percent. But was it rings or valves? Squirtng oil in the spark-plug hole provides a clue: Cranking compression will temporarily come up and leakdown percent should go down if the problem is in the rings; unchanged values point to a sealing or head-gasket issue.



I'm resistant to taking cars anywhere. But sometimes you have to bite the bullet and take it to an expert."

— Duane Searles

pened." Brandes says that was definitely enough to cause a kick-back problem.

As Searles had already changed out the ignition module, Brandes figured the problem was with the pick-up coil and retractor, which, he says, is hard to isolate on the machine. "We temporarily put in the shop's known, good 'real' GM HEI, and the double-firing went away. But we still had high starter amp draw. We temporarily replaced Searles' starter with a known-good starter I had lying around. Amp draw went down and crank speed was consistent across the board."

Inspecting Searles' starter, Brandes observed the drive-pinion in the solenoid's nose end had excess play. "I could move the pinion up and down by hand!" Brandes says the bum distributor probably did in the starter. "Basically, an in-cylinder fuel-burn takes about 2.5 milliseconds. If you fire too soon—especially under crank—it's awful rough on starters. It can even do in the ring-gear teeth on the flexplate. Fortunately, Searles' flexplate checked out OK."

THE FIX: IGNITION

Searles had expressed interest in some serious future power-adder upgrades—assuming he could ever get the Camaro running properly in its present configuration—so Brandes upgraded the ignition with high-end MSD components to allow room for future growth:

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triggered small-cap distributor still retains vacuum-advance provisions. MSD includes a spring-and-bushing assortment for dialing in custom centrifugal advance curves.

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- **8.5mm Super Conductor spark plugs:** Visual inspection revealed several wires with header burns. Brandes used an MSD universal wire kit that comes with the spark-plug terminal preinstalled and the distributor end unterminated, allowing for custom routing in nonstock combinations.
- **MSD Iridium spark plugs:** MSD now carries a complete line of spark plugs that complement its full line of high-output ignition controls.

THE FIX: STARTER

Electric power in a circuit manifests itself in the form of heat or motion. "Heat" is good for a light bulb or electric stove. But in an electric motor, you want electric power to produce "motion" (in this case, cranking the engine). Any heat developed in a starter is therefore wasted potential motion. Heat generated in a given circuit is proportional to the square of the current. Electrical resistance increases as temperature increases—and a failing or inefficient starter will see a significant temperature rise, which will either cause a voltage drop or an increase in current (ampere) demand, which causes even more heat in the circuit as a whole. Yeah, you guessed it—another downward spiral.



[There was oil contamination inside the offshore-made distributor's cap. Brandes says oil was migrating up the distributor shaft. While this indicates poor design, the splash wasn't near the cap's brass terminals. "This wasn't the cause of Searles' distributor problem," Brandes concluded.



[After placing the distributor on his old-school Sun distributor machine, Brandes observed an occasional double fire. When added to the already large amount of initial lead Searles was running, this caused the starter to kick-back.

PARTS AND PRICES

Includes the major parts required to fix the problem. Does not include shipping charges, sales taxes, miscellaneous small hardware, or small electrical wiring parts. Dimensions are in linear inches, except as noted. Priced 09/08/2015 at SummitRacing.com and subject to change.

BRAND	PART DESCRIPTION	PN	AMT.	COST
MSD	AMPLIFIER & CONTROL UNIT, ignition distributor, digital multiple discharge CD, programmable 6AL-2 w/ rev limiter, 535 primary volts, 135mJ spark energy, 46,000 secondary volts	6530	1	\$375.95
	COIL, ignition, Blaster HVC, E-core, square, epoxy, blue, 42,000 V, works w/ MSD-6 series	8252	1	\$127.95
	DISTRIBUTOR, ignition, Street Pro-Billet, Chevrolet V8, w/ vacuum advance	8361	1	\$259.95
	PLUG, spark, Iridium core, tapered seat, 14mm thread, 0.437 reach, 7/8 hex, projected tip, resistor, 61R4Y (4-pack)	37204	2	\$71.92
	WIRE UNIT, spark plug, 8.5mm Super Conductor, spiral-core conductor, silicone insulation, 90° HEI-type distributor terminals, multiangle spark-plug boots, universal, 8-cylinder, black	31183	1	\$91.95
POWERMASTER	MOTOR ASSEMBLY, starter, Ultra Torque, 200 lb-ft capacity, 2.2kW output, Chevy V8, universal (fits 153- or 168-tooth flywheel), chrome body	19450	1	\$409.97
TOTAL				\$1,337.69

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Stage 5 Kit

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[MSD provides the ignition cure: Its Street Pro-Billet distributor has an oversize, QPQ-coated, steel shaft for low friction that rides in a sealed ball bearing at the top of the distributor with an extra-long sintered bushing at the bottom. This combination keeps the shaft steady, creating accurate spark delivery at any rpm.

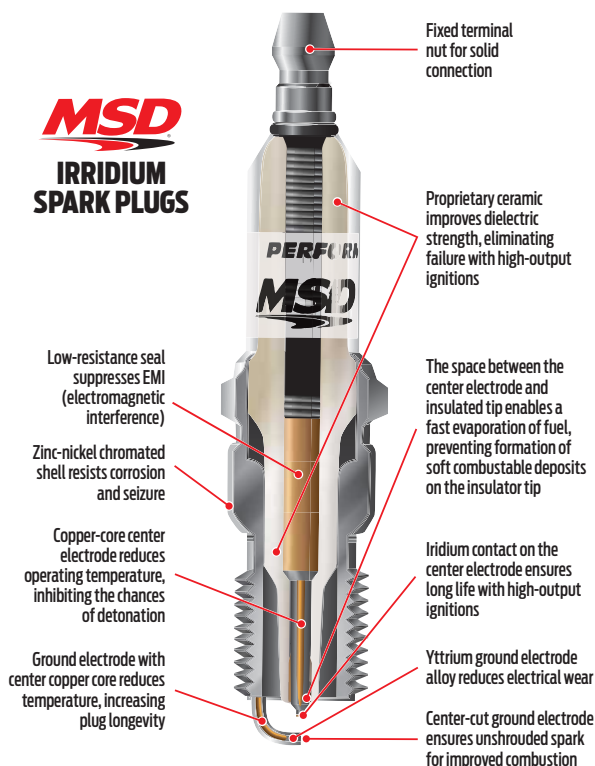


[The Street Pro-Billet's accurate magnetic pickup triggers a separate MSD ignition control. In this case, Brandes went with a Programmable 6AL-2 that shares the same advanced features of the new 6AL-2 with 535 primary volts and spark energy reaching 135 mJ. However, the programmable version allows constructing a software-based advance curve if desired.



[All the potential energy from the latest MSD ignition controller is for naught without a complementary coil. Brandes installed MSD's Blaster HVC coil that's designed to maximize voltage and current under sustained operating conditions without overheating.

MSD IRRIDIUM SPARK PLUGS



[MSD is now in the spark-plug business. You can now have an all-MSD ignition setup from stem to stern. The new plugs are specially formulated to better stand up to the high outputs generated by MSD ignitions. For example, the Iridium tip has a 40 percent higher melting point compared to common nickel tips.

Bottom line: A hot, failing, and/or inefficient starter can't put out enough juice to crank a robust engine.

Brandes wanted an engine that would crank, not one that was cranky, so he went with a quality, 100 percent "made-in-the-USA" Powermaster Ultra

Torque 200-lb-ft high-speed starter. There's really no such thing as too much starter. A starter must have enough output to spin an engine at sufficient rpm without overheating, so you should always select one with the highest torque and power rating (in Watts) you can afford.

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[The pressure generated by the early firing distributor caused the starter to “kick back,” prematurely wearing out the starter-drive gear in the nose housing. Brandes could actually wiggle the shaft back and forth.



[The starter fix: Install Powermaster's compact 10.5-pound Ultra Torque starter that generates higher cranking speeds with less current demands than conventional old-school starters. It's also about 7½ to 11½ pounds lighter than a conventional starter. Old-school GM starters come in at 18 to 22 pounds, depending on whether they have an aluminum or cast-iron nose.

Powermaster recommends at least a 180-lb-ft starter for any engine with up to 12:1 compression, and at least 200 lb-ft for engines with more than 12:1 compression. Brandes future-proofed the installation with a 200-lb-ft unit.

THE FINAL DIAGNOSIS?

Ignition circuit fixed, engine now spinning-over freely: Brandes reran the cranking and leak-down tests, but the numbers showed only minimal improvement. He put the Camaro back on the chas-

sis dyno to attempt another run—and now, Brandes says, “The engine broke-up at 4,500 rpm. We no longer had an ignition problem; everything on the scope looked good with no misfire. But the four-gas exhaust analyzer showed poor combustion. We could also now hear some valvetrain ticking noise. We pulled the valve covers off and found another one of those cases of ‘blue rocker-arm balls.’ Something’s amiss in the valvetrain, but hopefully the problems will end there. But maybe not. Stay tuned next month for the final resolution as we finally get Searles’ Camaro running right.

POWERMASTER STARTER DYNO RESULTS

TEST NO.	SPEED (STARTER RPM)	CURRENT (AMPS)	VOLTAGE (VOLTS)	TORQUE (N-M)	POWER (WATTS)	TORQUE CONSTANT (N-M/AMPS)	EFFICIENCY
FAILED CAMARO CONVENTIONAL OLD-SCHOOL STARTER							
1	2,987	209	10.24	1.88	589	0.0089	27%
2	2,493	248	9.87	2.36	615	0.0094	25%
3	1,999	297	9.42	3.28	687	0.0110	25%
4	1,505	353	8.87	5.63	887	0.0159	28%
5	748	468	7.68	9.41	737	0.0201	21%
6	491	519	7.27	10.64	547	0.0204	14%
POWERMASTER REPLACEMENT CONVENTIONAL STARTER (PN 3510)							
1	2,996	240	10.26	4.02	1,262	0.0167	51%
2	2,502	283	9.83	5.50	1,441	0.0194	52%
3	1,999	340	9.30	7.30	1,527	0.0214	48%
4	1,499	409	8.62	9.77	1,532	0.0239	44%
5	745	537	7.36	14.16	1,105	0.0263	28%
6	503	580	6.95	15.67	8,25	0.0270	20%
POWERMASTER ULTRA TORQUE GEAR-REDUCTION STARTER (PN 9450*)							
1	2,782	234	11.06	5.06	1,474	0.0215	57%
2	2,299	303	10.67	7.95	1,914	0.0262	59%
3	1,803	396	10.10	12.07	2,277	0.0304	57%
4	1,499	469	9.71	15.35	2,409	0.0327	53%
5	1,205	561	9.14	19.56	2,467	0.0348	48%
6	1,046	610	8.89	21.67	2,372	0.0355	44%

*Functionally equivalent to PN 19450 used on car except PN 9450 has a zinc body instead of the PN 19450's chrome body.

STARTER EFFICIENCY

Powermaster has its own in-house starter dyno that tests starter performance and efficiency. Every starter leaving the Powermaster plant is run on the dyno and receives its own individual dyno-sheet dropped in the starter box. According to Powermaster's Dave McIlvaine, the key measure of starter performance is its efficiency. “Power going in versus power going out: That's the efficiency count. The closer you get to 50 percent efficiency, within the cranking rpm envelope, the less heat you put into the starter, and the more torque it can generate. The wattage going into the starter is producing more output per the energy it consumes. We also calculate what we call the ‘torque constant’; the higher the number, the better the starter efficiency versus current-draw.”

On its dyno, Powermaster compared the Camaro's failing, old-school, direct-drive starter of unknown origin to its equivalent, replacement direct-drive starter (PN 3510), as well as its high-end, 2.2kW (3hp) Ultra Torque gear-reduction starter (PN 9450) manufactured from premium materials, equivalent to the unit that Westech actually installed on the Camaro. An Ultra Torque starter is rated at 200 lb-ft, which should be more than enough for just about anything; if it's not, there's a 250-lb-ft version available.

In the adjoining table (above), power coming in from the battery is expressed in Watts (which is how power is measured in an electrical, metric, or International System of Units system). Starter efficiency is derived by dividing the Watts by the measured volts x amperes.

$$\text{Watts} \div (\text{Volts} \times \text{Amperes}) = \text{Efficiency}$$

Notice how a poorer-performing starter has lower output yet consumes higher amps. “A better starter will generate higher output torque while drawing lower amps,” McIlvaine sums up.

Contacts

MSD LLC; El Paso, TX; 915.857.5200 (main), 888.673.7859 (tech) or 915.855.7123 (tech); MSDignition.com

POWERMASTER PERFORMANCE; W. Chicago, IL; 630.957.4019 (sales) or 630.849.7754 (tech); PowermasterPerformance.com

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Mark Stewart From Lancaster, California Asks...

Can a Late-1970s Pontiac 400 V8 With Three-Bolt Engine Mounts Be Used in a Two-Bolt Chassis?

✍️ 📷 Marlan Davis

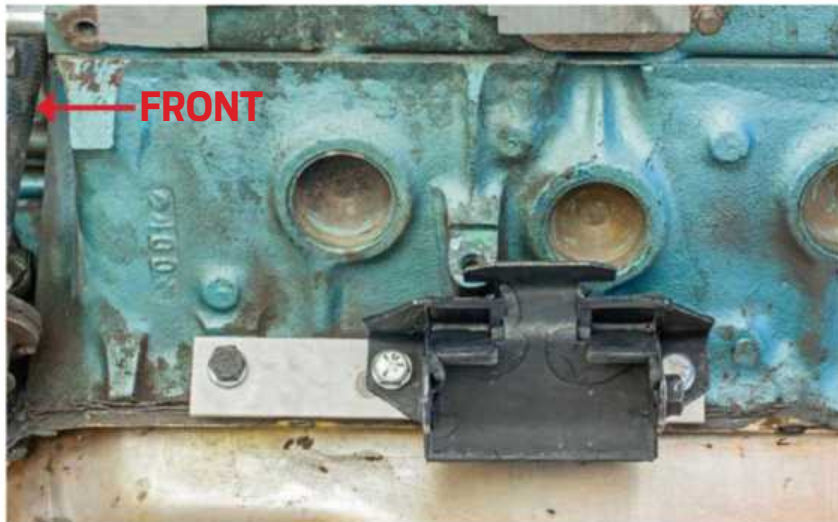
Q:

I have a 1979 Pontiac Trans Am 400 Pontiac V8 that I'm trying to install in a 1966 GTO, originally equipped with a Pontiac 389. The motor mounts are completely different. Is there any ready-made solution for getting this to work?

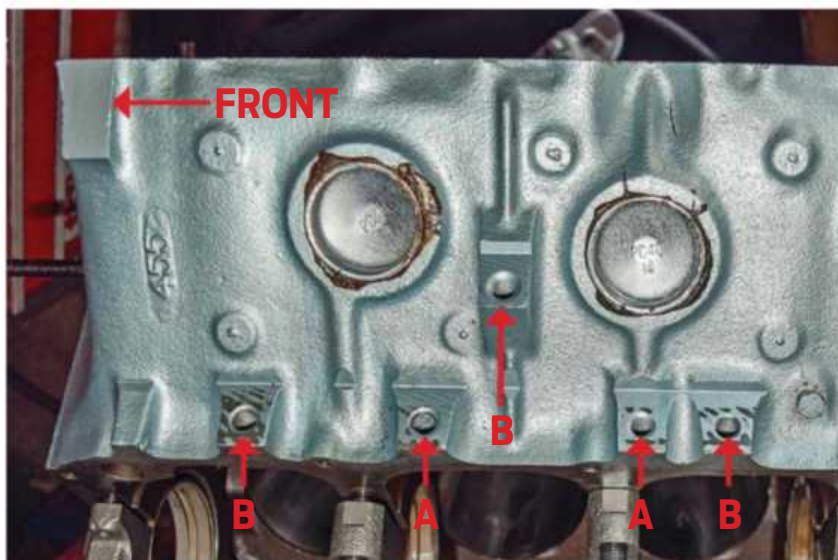
A:

As spelled out by the Pontiac restoration experts at Ames Performance, Pontiac V8 engine-mount configurations have evolved over that engine's long production run:

- **1959–1969:** Blocks produced during these years have only two engine-mount holes on each side of the block. In this era, the engine mounts containing the rubber insulation (aka “the rubbers”) attached to the block and mated to steel brackets (aka “the towers”) bolted to the front cross-member. Ames Performance offers an engine mount adapter kit (PN N244CA) for installing the two-bolt blocks into later chassis set up for three-bolt mounts.
- **1970–1976:** These blocks have both early and late mounting holes (five holes per side). Depending on the chassis, model year, and even engine displacement, the mounts for a given OE application in this time period could still be the carryover two-bolt design or the new three-bolt design. This was also a transitional period, where GM started bolting the rubbers directly onto the crossmember on some chassis. For nonstock applications, because it has all possible mounting-hole locations, this “five-bolt” design can bolt into any 1959–1979 Pontiac chassis originally equipped with a Pontiac V8 using the factory-style mounts and brackets for that chassis and model year.
- **1977–1979:** These blocks (which include your 1979 Trans Am 400) have only the later three-bolt mounting pattern fully drilled and tapped. In some cases, we've seen the old bosses still present on the casting, but they are “blank.” By this time, the mounts with insulating rubber always bolted to the frame, and the metal brackets all bolted to the block. Ames Performance also offers an engine-mount adapter kit (PN 244A) for installing late three-bolt blocks like yours into an earlier chassis set up for two-bolt motor mounts. We've actually used this kit and it works



[This is the completed driver-side installation of Ames kit PN 244A, which installs late three-bolt Poncho V8 blocks into earlier two-bolt chassis. The mounts (in this case, 1964–1974 A-body, except 455) are sold separately (Ames PN 226L, driver side, *shown*; use PN 226R on the passenger side). Equivalent auto-parts-store mounts for your chassis also work.



[A 1970–1976 block like this one has all five (both early and late) motor-mount holes on each side of the block fully drilled and tapped. 1959–1969 blocks have only two motor mounts per side (A). 1977–1979 blocks have three motor-mount holes drilled and tapped per side (B), although on some blocks we've seen one or more blank vestigial bosses may still exist.

Ken Crocie

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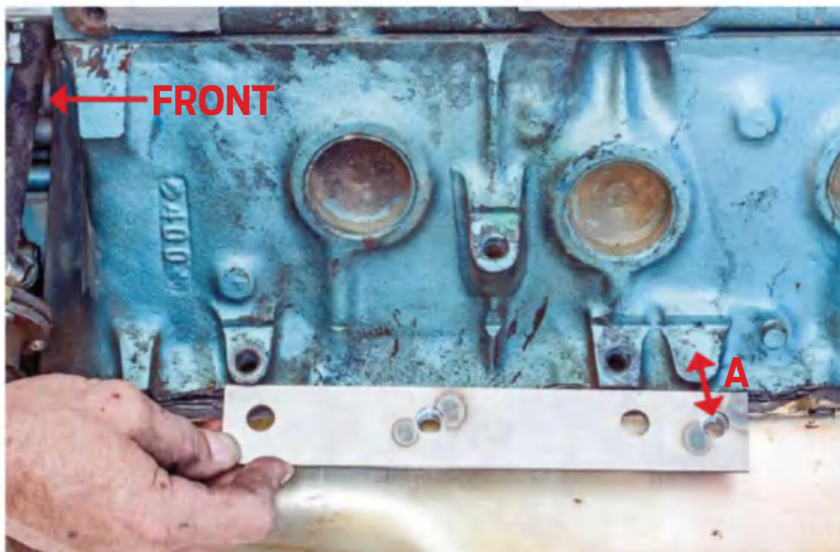


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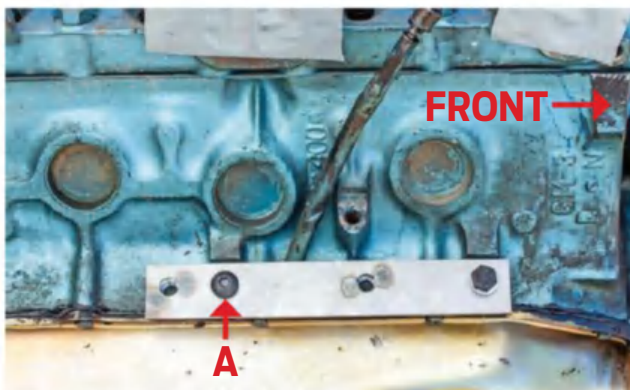
[Ames Performance supplies steel plates with two through-holes for attaching the plate to the block's existing holes, plus two additional holes with welded-on nuts to bolt-up the mounts or brackets for the chassis the engine will be installed in. The driver side on this late three-bolt block still had a vestigial blank boss for the early mounting pattern that interfered with one weld nut (A).



[Following the recommendations in Ames' instructions, the car owner trimmed away the blank boss so the adapter bracket could seat flush against the two forward, fully drilled and tapped, late-model block mounting holes. Exercise care not to hit the boss on the left that actually will get used.



[Here the finished cut awaits a final deburr and chamfer. A possible alternative approach: Remove the rearmost weld nut. Bolt the plate to the block by its two intended through bolt holes. Using the now nutless end hole as a locating template, center-punch the blank boss, drill and tap to $\frac{7}{16}$ -14, and install a long bolt through both mount and adapter plate into the block.



[There was no extra boss on the passenger side. Ames' driver- and passenger-side plates are different; they're correctly installed when their smooth side faces out (nuts toward the block), and the holes are closer to the top than the bottom. Needed for mount clearance, the two supplied button-head capscrews go through the second hole from the rear in both plates (arrow).



[Someone welded this late-style rubber mount directly to an early frame. No fun removing it when it finally failed, though.



[These are the correct early type metal frame "towers" that fit most 1964–1972 Pontiac V8 chassis (except 455 motors). Ames Performance sells them as a set (PN N245B). It's not exactly easy starting the nuts and washers on the bolt shanks within the boxed crossmember, but still much less painful than breaking apart the welded-on late mounts previously installed on this old Indian.

more or less as advertised, but like any hot rod part, there are a few things to look out for (see photos).

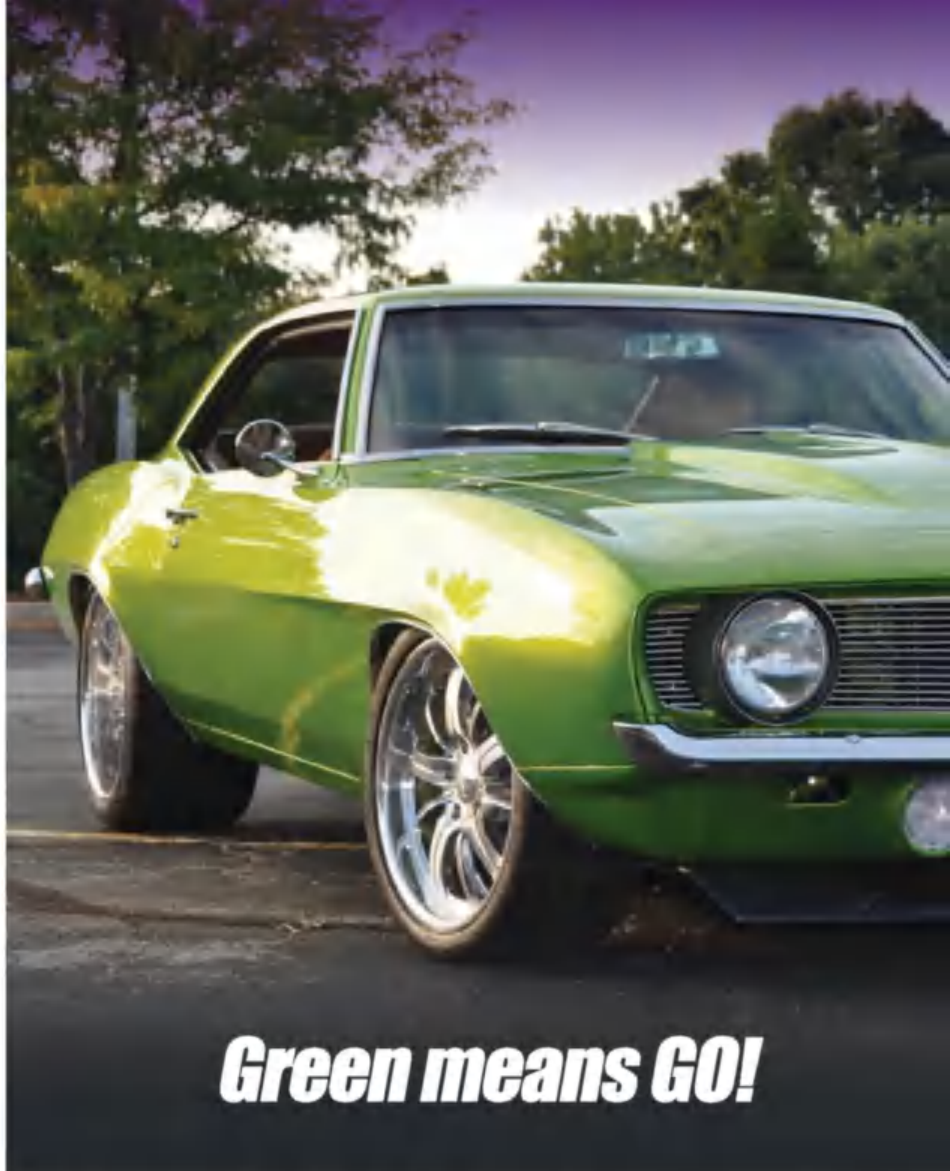
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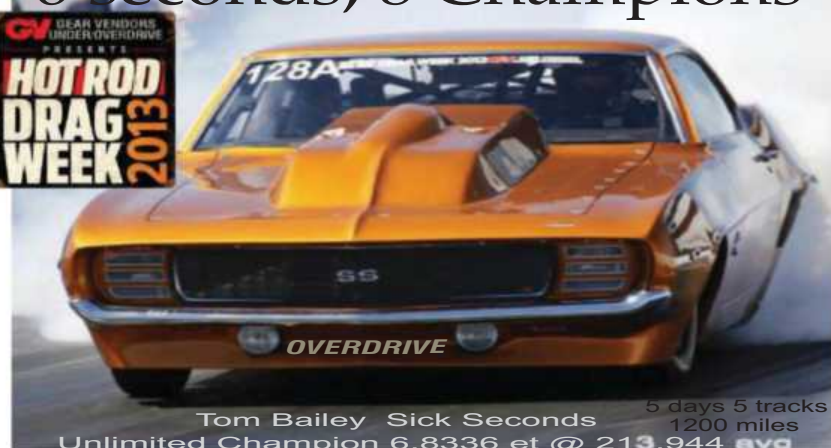
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Holley // 866.464.6553
Holley.com

Holley's Terminator EFI master kit includes everything you need to convert your carbureted engine to throttle-body fuel injection. The kit fits V8 engines from 250 to 600 hp and uses a 4150-style mounting flange. The self-tuning ECU includes a full-color, 3.5-inch touchscreen LCD for both basic and advanced tuning options, no laptop needed, although a free software upgrade allows laptop tuning as well. Included is a complete fuel system with pump, filters, 40 feet of hose, billet regulator, and fittings—including the return line bulkhead. There's timing control options for GM small-cap HEI and Ford TFI distributors and connections for Ford, GM TH350, 700R4, and other transmission linkages. Full-color instructions are included with user-friendly wiring and fuel-system diagrams.

Price: \$2,400



Cam Keeper

Comp Cams // 800.999.0853
CompCams.com

Built for all Gen III and IV LS engines, but especially helpful on LS applications retro-fit with a distributor that adds thrust to the camshaft, Comp's new bronze LS camshaft retainer features an upgraded cam thrust plate along with a lock-bolt plate for three-bolt LS cams. The thrust plate is made from a billet bronze alloy that is much stronger than the stock part and is CNC-machined



LS Engine Swap Cruise Control

Dakota Digital // 800.852.3228 // DakotaDigital.com

If you'd like cruise control in your LS-swapped project car, Dakota Digital's CRC-1000 might be the solution. It works with 2006-and-newer drive-by-wire GM CAN BUS systems (2005 Corvette and GTO as well) and provides cruise control by plugging into the throttle pedal and diagnostic port. Wire it to 12-volt power, ground, and your existing brake light switch and the included switch will bring cruise control convenience to your car.

Price: \$345

High-Tech Heat Shield

Design Engineering Inc.
800.264.9472

DesignEngineering.com

DEI's new ONYX Series flexible heat shield joins an outer layer made from heat-treated woven glass fiber impregnated with aluminum to a heat-resistant, 89 percent silica fabric capable of withstanding extreme exhaust temps (up to 1,350 degrees Fahrenheit). Combined with DEI's stainless steel standoff mounting system, the flexible heat shield can be used as a barrier between exhaust and bodywork, suspension components, or electrical harnesses. Designed to be flexible, the shield fits many different applications and pipe diameters

Price: \$45 for the 4x8-inch shield



and ground to precision tolerances for an excellent surface finish and significantly reduced friction. It also features a CNC-machined O-ring groove for a positive oil seal.

Price: \$105


A large advertisement for Lokar Performance Products. It features a silver classic car in a garage setting. The text 'LOKAR PERFORMANCE PRODUCTS' is at the top, followed by 'EVOLUTION OF EXCELLENCE!' in large blue letters. At the bottom, there are images of various Lokar products with labels: '67-69 Curved Camaro/Firebird Brake/Clutch Pedal Assembly', 'Drive-By-Wire Electronic Throttle Control Pedal Assembly', and 'Goalsby Edition 12 Volt Door Handles'. The slogan 'QUALITY... PLAIN & SIMPLE' is at the bottom right.

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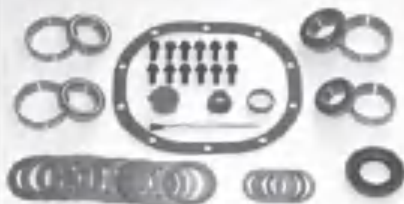
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What if You Were Forced to Cut Gas Use in Half?



In September 2015, the governor of California aggressively supported a legal mandate for a 50 percent reduction in gasoline and diesel use in the state by 2030. It was part of Senate Bill 350, which passed the senate but had the gas-cut language removed thanks to public outrage and oil-lobbyist influence. That's the good news. The terrifying news is that, in a diatribe after the failure of his dream bill, Governor Jerry Brown said, "The only thing we don't have is a formal statement in law of the 50 percent goal, but the ARB is committed to that 50 percent goal and I am committed to backing them up," and, "we might get another bill next year, we might just keep doing it by regulation."

Translation: Governor Brown, via California's Air Resources Board, can force gasoline cuts whether they are law or not. The ARB is an appointed committee with the power to create and enforce executive orders and to levy fines without the inconvenience of approval from the same public that funds its annual budget of \$860 million. ARB chairperson Mary Nichols has a goal of zero gas-burning vehicles sold new in California by 2030 and recently Tweeted, "gasoline is so 19th century." While never voted into office, she oversees a governmental body with the power to create gasoline tariffs and rationing and to control the products sold

in California by all automakers.

Whatever your position on how gas may spell doom for humankind, you've gotta call this psycho. California's government website estimates a population gain of 13 percent during the next 15 years, but the governor insists we use half the gas over the same period. Some of that would be covered by President Barack Obama's mandate that cars average 54.5 mpg by the year 2025 (assuming Nichols allows those gas-burners to be sold in California by then). The rest of it would mean people going to work half the days. It would require half the food delivered to stores, or all the food delivered to half the stores. It would require every fleet of taxis and buses and trucks to cut their business in half, or for half of them to go out of business without the remaining ones growing at all. Hotels and other tourist-dependent industries would vaporize. And don't forget the devastation to the hot rodding industry. Maybe we'd get lucky and half the population would move out of the state (which might solve the water shortage).

Governor Brown says California must lead the country and the world into salvation from gasoline-fueled global destruction. The best news for you? Other states don't follow California's example nearly as much as our politicians keep telling us they do.

►HOTROD.COM/David-Freiburger

[Dirt-cheap prices at Missouri gas stops during HOT ROD Drag Week™ reminded us that California pays the fourth highest gas taxes in the country, and the overall highest price at the pump thanks to the "hidden" gas tax of cap-and-trade fees of around 10 cents per gallon charged to refineries in California.



BEHIND THE SCENES

I'm currently working on five new video series for 2016, including *Road-Kill* spinoffs, an *Engine Masters* show, and some 4x4- and import-related shows.

By the time you read this, we will have just wrapped up the first HOT ROD Drag Weekend event (October 28–31, 2015, in Arizona and California) and our massive coverage of the 2015 SEMA show. See all that now on HOTROD.com.

We just started a conversation about a HOT ROD Epic Drives series of events for 2016. What's your favorite road in the USA? Email tips to HOTROD@HotRod.com.

Want to send an email ranting that HOT ROD should not cover political topics? Go ahead. I'll just remind you that the magazine has been doing it since 1948.

Car I Most Wanted to Build on the Day I Wrote This I just bought a 1967 Mercury Cougar with a swapped-in 4V Cleveland and a Top Loader four-speed. It's been sitting since 1992. I got it running, but I'm itching to fix the brakes and drive the thing.

Best Instagram Pic This Month



[Need a sneak-peek of next month's issue? Go to HOTROD.com/events/drag-week/.

Coming Next Month: Drag Week 2015

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